TAMAN NEGARA

MASTER PLAN

Department of Wildlife and
National Parks
Ministry of Science Technology and the Environment
Kuala Lumpur
February 1987

A MASTER PLAN FOR THOSE AREAS OF KELANTAN, PAHANG AND TRENGGANU COLLECTIVELY KNOWN AS TAMAN NEGARA

Approved by

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MOHD KHAN BIN MOMIN KHAN KMN
(OFFICER-IN-CHARGE)
TAMAN NEGARA.

th February 1987

PREFACE

This Master Plan is a general policy document which is meant to form the basis of more detailed studies, of more detailed plans and development proposals. This document itself is not to be considered as a final statement on the matters contained, but is intended to be updated and modified as the knowledge of the Park increases (for example information pertaining to its natural resources or regarding endangered or critical species) or as the needs for its use and development change with time. This plan covers the following:-

- the basic policy concerning all possible aspects of Taman Negara, its resources and uses.
- a description of the Park, its characteristics and resources.
- a general policy for park development and use together with sample guidelines for the development and implementation of some areas e.g. Kuala Koh.
- a general policy for the development of specific plans relating to specific disciplines e.g. Wildlife management.

The approach adopted has been based upon American National Park Service system (NPS) which is perhaps the most advanced system available, although this may be arguable. This means that the American NPS has guided the concept, basis, format, scope, objectives, principles and, techniques of this master plan.

In keeping with the American NPS system this master plan is not an action document but is the basis upon which a number of other plans (action, development, implementation or management) will be formulated. Several such plans are already in existence for Taman Negara such as the Kuala Tahan Development Plan and the Proposal to develop Kuala Koh/ Kuala Pertang. Naturally these plans will be further reviewed and developed in the light of this master plan. Other implementation and management plans will follow suit.

This plan has been drafted by a senior departmental team. The following disciplines and experience has been brought to bear upon this effort.

- National Park management and administration,
- recreation development and planning in parks and reserves,
- natural resource management in conservation areas,
- wildlife research,
- wildlife management,
- zoology,
- botany,

– ecology,
– forestry,

Several different authors have been responsible for drafting the various sections and as such different styles can be perceived. This is quite unavoidable within the time constraints that have been allowed for the drafting of this plan. However this does not affect the basic continuity of the document because each section been written in accordance to a preset approach.

It must be noted that each section has been deliberately formatted to be read as an independent unit and as such there are minor repetitions of fact from section to section.

Taman Negara Master Plan Review Committee

Mohd Khan bin Momin Khan (Chairman)	Director General for Wildlife and National Parks
Ahmad Mokhtar bin Hj. Akob	Pahang Darulmakmur State
Tengku Shah Buddin Maasum	Kelantan State
Zamhot bin Hassan	Tourist Development Corporation
Mj. Yusoff Azudin bin Ahmad	91st Engineering Regiment
Lena Chan	World Wildlife Fund Malaysia
Dr. Thow Yow Pong	Malayan Nature Society
Dr. Zaini Shaari	Malaysian Mountaineering Association
Yap Boh Heong	Malaysian Mountaineering Association
A. Rashid bin Samsudin (Secretary)	DWNP

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Cover Photograph

Lata Berkoh by Chew Seng Choon

INTRODUCTION

Taman Negara was created as a National Park in 1938/1939 as a result of recommendations made by the Wildlife Commission of 1932. Prior to this the area came within the larger Gunung Tahan Game Reserve. Initially, it was named the King George V National Park to commemorate the silver jubilee of the monarch.

The Park boundary traverses through the states of Pahang, Kelantan and Trengganu, and therefore three different state legislations were enacted, one for each state concerned.

The principle legislations governing Taman Negara are Pahang Enactment No. 2 of 1939, Kelantan Enactment No. 4 of 1938 and Trengganu Enactment No. 6 of 1939. The Wildlife Protection Act No. 76 of 1972 also can be applied with regard to the protections of scheduled wild animals and birds within the Park.

Each state park has two trustee, its ruler and the Yang Di Pertuan Agong (originally the British High Commissioner under the Colonial Administration). Taman Negara therefore achieves coherence as a single entity through the position of His Majesty the Agong who is trustee to all three state parks.

Taman Negara covers a total area of 4,343 square kilometers divided as follows: Pahang 2,477 (57%), Kelantan 1,043 (24%) and Trengganu 853 (19%) square kilometers respectively. In each state drainage is mainly through one major river system, the Tembeling in Pahang, the Aring-Lebir in Kelantan and the Trenggan in Trengganu. The steep land boundary occurs at about 140 meters above sea level and 85 percent of Taman Negara lies above this level.

Although Taman Negara has been in existence since 1939 there is to date no comprehensive master plan for the area. While it was recognized that there was such a need, the drafting of this plan remained a subpriority in view of more urgent tasks before the Department of Wildlife and National Parks Peninsular Malaysia (DWNP) and also in view of the Department's limited manpower resources.

It has now become a matter of urgency that such a master plan be drafted because the park is moving into a period of more intense development some of which will be in the hands of the private sector. This urgency also stems from a recent experience where the lack of a Master Plan for long term Park development was revealed as an almost critical weakness. There was a proposal to put a road up the Tahan Valley to the base of Gunung Tahan as a means of making the mountain more accessible to visitors. It

was obvious to the Department and its Ministry that this proposal would do major and irreversible damage to the Tahan Valley which was clearly not consistent with the principles of the Taman Negara enactments. However there was no clear policy statement which elucidated these principles nor was there a master plan based upon the full range of reasons for which the Park was created. This meant that there was no plan for Park zoning or for long term balanced use, against which the proposal to build the road could be measured and reasoned.

PURPOSE AND OBJECTIVES

There are perhaps no more eloquent words to describe the purpose and objectives of Taman Negara than those contained in its enabling enactments where it is stated that Taman Negara has been created to:-

"set aside and reserve in perpetuity in trust for the purposes of the propogation, protection, and preservation of the indigenous fauna and flora of Malaya and of the preservation of objects and places of aesthetic, historical or scientific interest".

It is neither sufficient nor proper that such values be secreted away and left unused. They must also be seen, experienced and enjoyed by people so that their value can be realized in a practical way. In consequence the Park can play its role to instill in all Malaysians an appreciation of their tropical rainforest heritage. Thus the law does make provision for recreation in the Park. However it is important that recreation does not become instrumental in a loss of value of the Park for future generations. Thus the emphasis of the law is clearly upon preservation. It is both present and future generations that should be able to enjoy the outstanding scenic, scientific, historical, recreational and educational resources of Taman Negara.

To achieve this, the Master Plan will follow the principles enshrined in the Taman Negara Enactment and upon consequent policies formulated by the Director-General, Department of Wildlife and National Parks, Malaysia who is the Officer-in-Charge of Taman Negara as appointed by its Trustees. On August 14th, 1986, the Director-General of DWNP in initiating the task to draft this Master Plan reaffirmed the obligation of the Department under the Enactments;

> **"Our job at Taman Negara is clearly to administer, manage, and protect the area and provide public access and use without impairing the environment and reducing the wildland recreational experience."**

In an article in the Malayan Nature Journal (1971), the Director-General also elucidated important principles of managing the Park which have been derived from the Enactments;

'In our National Park we try to maintain all the natural species of wildlife– of the native predators and the small mammals – in their natural environments and relations' and

'we try to maintain the Park as a well balanced system of wildlife that will serve the purposes that are outstanding there – recreational, aesthetic and scientific'

These principles are an integral part of this master plan. In compliance with these legislative orders and policies, the following primary objectives are derived;

1. to conserve and preserve the indigenous flora and fauna of Taman Negara and its tropical rain forest ecosystems in perpetuity,

2. to propagate and manage selected species of native flora and fauna of significance,

3. to manage and develop the Park for recreation within the letter and spirit of the authorizing legislation,

4. to preserve objects and places of historic, aesthetic and cultural value, and

5. to provide a great natural laboratory for the study of the tropical rain forest species and habitats and on ways of managing them.

PARK ADMINISTRATION

The Officer-in-Charge of Taman Negara is the Director-General for Wildlife and National Parks who is responsible for its overall administration. The Director-General's primary task is to formulate the policy for administering the Park. The Superintendent is responsible for its day to day running. This is basically a housekeeping function related to personnel management, financial management, upkeep of Park installations and supervision of its recreational and visitor activities.

To ensure that Taman Negara is smoothly run the following functions are necessary:

Management

The manager is the Park Superintendent who is in overall supervision of the Park staff. He shall execute and coordinate plans and policies, and integrate the many functions that are necessary to achieve the objectives for which the Park was set up. As supervisor of personnel he shall stimulate and direct all their activities.

Financial Control

Administration of finance is important in ensuring execution of all activities concerning all sections. The administrative section reports to the Superintendent on the status of funds for running the Park and on the inventories of equipment and supplies. This administrative section should also up-date all expenses and revenues collected and ensure that items purchased are available for use by other sections.

Maintenance

The maintenance staff are responsible for upkeeping of all installations and facilities. Trails and the headquarters compound should be maintained continuously to ensure easy access and cleanliness. Waterways should be maintained to ensure reasonable access by boats. All maintenance should be the responsibility of a single section under one supervisor.

Protection

The Park rangers are empowered and responsible for the protection of Taman Negara and its resources. The present ranger stations should continue to exist. A number of new stations should also be built to safeguard the Park especially in areas where development has now reached the Park boundary. This is the case along the western boundary, now adjacent to the new Kuala Lipis – Gua Musang Highway. This boundary is now vulnerable and needs ranger stations.

There should be a balance between adequate information given to visitor on restrictions and the physical law enforcement itself. An extensive interpretive program is more important than law enforcement when dealing with visitors. Greater emphasis should be placed on prevention of offences rather than on imposing penalties.

PARK ENFORCEMENT

Under notification in the gazette, Officer-in-Charge with the approval of the Yang DiPertuan Agong can appoint a Park Superintendent, Assistant Superintendent and Park Rangers for proper running and protection of the Park.

The provisions of the Enactments and rules made under the Enactments provide for the powers of the Park officials as well as restrictions regarding what activities may be allowed in the Park. While the full provisions as given in the Enactments and Rules made thereunder may be found in Appendix A attached, below are listed some of the more significant provisions of these laws.

1. All entry to the Park must be subject to a written Permit which must be signed by the person entering the Park. The permit will specify the point of entry and exit.

2. No person other than a Park official acting in the performance of his duties shall convey into the Park or be in possession of any weapon, explosive, trap, net, birdline, poison or other thing intended to cause injury to any animals.

3. The destruction, damaging or defacing any object of zoological, botanical, geological, ethnological or other scientific or aesthetic value is prohibited. Subject to the Rules, Park officials have powers to arrest, search and compound offences.

4. Penalties for offences shall be up to five hundred dollars or imprisonment of up to six months.

A primary target of law enforcement in the Park are local villagers, who enter the Park for various illegal purposes such as collecting rattans and other jungle produce and sometimes poach wildlife. It is important that with this group of people, law enforcement should go hand in hand with an active public education and public relations program. This program should be primarily aimed at creating an awareness among the local villagers on the purpose and importance of the National Park. The voluntary support of local villagers in ensuring that the enactment is observed and followed, would be a very valuable asset to the Park authorities. A greater emphasis on local public relation is more important than law enforcement. Nevertheless a local offender should be dealt with firmly by compounding offences or even in serious cases being taken to court.

Interpretation

The interpretive officer is responsible for the dissemination of Park information, and the orientation and educational program. This includes training guides and receptionists, developing and updating the interpretive program and also interacting with visitors.

INTERPRETATION

The tropical forests of Taman Negara consist of one of the most highly diverse and complex ecosystems of the living world. In addition within the Park there are several major ecosystems, the most complex of which is the lowland Dipterocarp forest such as is found around Kuala Tahan. Even to someone from a biological discipline it remains bewildering outside his specific field. Much more so with a layman. Thus the Park requires a comprehensive interpretive program in order that this complexity be made more understandable, whether the features concerned are permanent or transient. This program should result in an educational interpretive service for the purpose of making available to the public facts and information pertaining to the Park.

Facilities and services have to be created at Park headquarters to provide for visitor orientation, understanding, and appreciation of the Park and its resources. These facilities will include visitor centers, museums, amphitheaters, campfire circles, way side exhibits, signs and markers, interpretive trails, publications and guides, manned and self-help information booths, maps and audiovisual devices.

The sale of appropriate handicraft articles associated with or interpretive of a culture should be encouraged. Visitor use and enjoyment of significant scenic or scientific features in the Park by means of exhibits, nature trails, and interpretive devices and high hides should also be encouraged, especially these last named facilities which are particularly suitable for wildlife watching in Taman Negara.

VISITOR POLICY

Taman Negara is the heritage of all Malaysians none of whom should be denied the reasonable opportunity to visit their National Park. There should generally be equal opportunity for all people to visit the Park regardless of status, physical conditions, color, race, religion, age, health, nationality or income group. The National Park should not become a resource reserved for any exclusive few.

Future development should take into account the above principles and ensure that all the different groups of people that will wish to visit the Park in the future will be able to do so. For the present among Malaysians the following groups may be singled out for special mention.

1. School children whose special requirements will be reasonably low costs of transportation, accomodation and board.

2. Members of the lower income groups whose special requirements are similar to those of school children.

3. Members of local nature clubs, associations, governments departments and societies who should be allowed special local club rates and discounts on Park charges.

Another group that the Park should plan for is the disabled, with special facilities for stay, movement and recreation of these people such as wheelchair slopes and special toilets.

Finally in keeping with the principle that the Park should be made available to people from all walks of life, there must never be any effort to create an exclusivity about the place with respect to any specific group for example the rich tourist only. There must always be a place for the low budget traveller too.

WILDLAND RECREATIONAL RESOURCES

There are two aspects of wildland recreational resources that must be considered in this section. First are the natural features for visitor use such as the forest, rivers, pools, saltlicks, fishing areas, mountains and limestone outcrops and second the human made facilities associated with the use of these natural features.

The overall principle for the use of all visitors facilities in Taman Negara is that:-

(i) there should be no deleterious effect upon the natural flora and fauna, and
(ii) there should be no reduction in value of that resource as a source of visitor enjoyment.

The first of these points derives from the principles laid down in the Taman Negara Enactment which gives priority to the preservation in perpetuity of the Parks natural flora and fauna. The second point derives from a desire to give visitors to the Park a truly unique experience of the rain forest; its ecosystems, solitude and beauty.

As for recreational objectives, this Park which has vast recreational resource potential, must be managed in such a manner as to comply with the above principles. The objectives are:

1. to assure that all services supplied to the visitor within the park adhere to the standards which will ensure an experience enriching to body, mind and soul,

2. to promote a unique and wilderness recreational opportunities,

3. to provide wildlife observation opportunities in the natural habitats,

4. to maintain a balance on the quantum and area of development around Park headquarters so that the overall purpose of preservation is adhered to,

5. to control degradation of the qualities that make for wilderness – "naturalness, solitude and absence of permanent visible evidence of human activity,"

6. to keep wildlife wild, their behaviour altered as little as possible by human influence,

7. to research other potential recreation resources and alternative recreation opportunities for user,

8. to develop a comprehensive interpretive program,

9. to manage the Park through an effective resource management program, and

10. to plan and provide visitor facilities within the Park to attain good balance and diffusion of use in the Park.

The natural resources of Taman Negara which have recreational value are forests, rivers, swimming pools, salt licks, mountains and limestone outcrops (including caves).

Forests and short forest walks

The tropical forest of Taman Negara are perhaps its most important single resource. It provides for the ornithologist, botanist and zoologist (in various fields of specialisation), the dedicated nature lover and the more general casual visitor out to experience the 'jungle'.

The overall principle is that these forests should be maintained in their pristined state. Any visitor development will tend to disturb or destroy some of the forests unique qualities. It is easy, especially when there seems to be a pressing need to attract more visitors to the Park, to place the needs of visitor development before this principle. It must never be forgotten that recreation and other uses of the Park are in fact secondary and subject to the primary consideration that its habitats and ecosystems are to be preserved in perpetuity. Excessive development or large scale tourism will cause the loss (or diminish the value) of those very factors which are the Park's primary attraction to visitors.

Therefore the following principles should be observed:-

(i) all development of and within the forest area should be kept to an absolute minimum,

(ii) the visitor centers should be spread out over the periphery of the Park to minimize the point intensity of the visitor impact,

(iii) walking trails should be carefully planned, marked and maintained and should go hand in hand with a good interpretive program, and

(iv) there should be a current and active interpretive program at each major visitor center. This program should be headed by a qualified interpretive officer.

The primary task of the interpretive officer will be to produce brochures for each walking trail pointing out its interesting features. This brochure should also include a map on which the above features are shown. It should also tell the visitor what sort of animal life he is likely to meet on a particular trail. A second task of the interpretive officer will be to constantly monitor the trails and forest under his responsibility and to observe the many interesting transient features of the flora and fauna. The map of the trail should be so designed so that these transient features can readily be referred to a location and be easily found.

The rivers and boating

At present, approach to the Park as well as many journeys within the Park are by river. In fact the journey by boat into the Park is considered by many as the highlight of the Taman Negara visit. This journey gives visitors, especially foreign visitors, an opportunity to see how the rural riverine communities of the country live. It also greatly contributes to the impression that they are really going into a remote area. In order to maintain and enhance this impression, it is suggested that some steps be taken to ensure that the banks of the Tembeling river or any other river that is used for access to the Park be kept as forest-lined as possible and free of any signs of development such as plantations and roads. This means that only a narrow strip of land a few meters wide needs to be so protected. **[It is to be noted that according to law, a strip of forest, the DID River Reserve, 50 m in width, must be preserved on the banks of the Tembeling River.]** The nearer one gets to the visitor center, such as Kuala Tahan the more important it becomes that this principle be observed.

Boating on the main Tembeling and its tributaries flowing from within the Park is a highly sought after visitor activity. The development of the upper Tembeling needs to be monitored. Logging and plantation development can result in heavy siltation in the river. This effect is already being experienced at the Park due to logging in the Upper Tembeling outside Taman Negara. The buildup of the sand island immediately opposite Kuala Tahan diverted the river flow pattern towards the bank where the Park jetty floats. This is causing serious erosion of the river bank at the mouth of the Tahan and will in time endanger some of the Park buildings above this bank. Park boatmen have also noted that the raising of the river bed by sand deposits now makes the river difficult to navigate even during a relatively short dry spell. The impact of logging or developing the Ulu Tembeling should be studied and methods adopted to minimize the deleterious effects upon the Park.

The rivers within the Park should be maintained in their pristined state. This means that no development be allowed that will affect water quality or cause siltation.

Boating is an activity which is very popular and can be enjoyed by everyone irrespective of age or physical fitness. It is obvious that there should always be sufficient small boats and boatmen to meet the visitor needs. The practice of allowing private boats to be hired within the Park should be carefully considered from two points; safety and proper control and care of the Park's flora, fauna and other artifacts. Should a boating accident involving a private boat occur within the Park, the department as the responsible authority would have difficulty avoiding some of the blame in the public eye. Should the use of private boats be unavoidable then some form of departmental control should be exercised over the condition of the boats used, the experience of the boatmen, the number of passengers allowed and possibly the price of hiring such boats.

One form of boating is small self-paddled canoes for the slightly more adventurous visitor. These should be made readily available and visitors should be given a guide to enable them to better appreciate the natural features of their journey. Safety of the visitor should also be considered.

Swimming pools

Swimming in rivers is another of the much sought after visitor activity. It is important to impress upon visitors unused to the dangers of river currents that it is just not safe to swim at any but designated pools. Should overcrowding become a problem some sort of control of the use of pools should be considered and implemented.

Fishing

Fishing is the traditional recreational activity offered by the Park. In fact the early visitors to the Park were largely anglers. Today there is virtually no rules regarding this sport in the Park beyond the stipulation for a fishing licence.

Sport fishing in the Park needs to be scientifically studied and organized taking the following factors into account.

1. Fishing zones – areas to which sport fishing should be restricted. It may also enhance the sport if certain areas of river are only periodically opened for fishing.

2. Fishing seasons – the times of the year when different species may be caught should be established, so that over fishing of any species does not occur.

3. A minimum catch size for different species should be established and anglers required to return all undersized catches to the river.

4. There should be a limitation on the number of fish that may be caught and kept by a single angler. There is a need to set a limit to the number of fish that may be taken away from the Park. This would prevent sport fishing from assuming a commercial role.

Mountains and long jungle treks

Gunung Tahan offers a rare challenge to the adventurous mountain climber. It is not just the challenge of climbing the massif but also of making the long trek to and from the base of the mountain. While it is true that the pleasure of being on this mountain should be made more available to people it is also important that the element of challenge be not reduced nor should the uniqueness of this challenge be diminished. It is in this context that the whole question of whether the base of the mountain (Kuala Teku) should be made more accessible to vehicles should be carefully weighed keeping in mind the following factors:-

1. That any development to change the present situation is essentially irreversible.

2. There are other peaks of almost the same height in the vicinity, such as Gunung Benom in the Krau Wildlife Reserve which is only about 100 meters lower in height, that can be made to serve as a resort for a broader spectrum of climbers. (It is to be noted too that the Krau Wildlife Reserve is also much more accessible than Taman Negara.)

3. Other more accessible approaches to the mountain can be used removing the unique challenge of the approach from Kuala Tahan. An example is the approach from the western side of the Park, from the Sungai Tanum area which is roughly the same distance from the peak of Gunung Tahan as is Kuala Teku (the furthest point a road from Kuala Tahan could practically reach).

The trip up Gunung Tahan involves a long jungle trek of about nine days. Other long jungle treks should be considered to enable adventurous visitors to fully experience the forest without necessarily climbing a mountain. As with Gunung Tahan, the longer journeys should be undertaken with a guide.

Attention should be paid to the problem of the accumulation of rubbish on long treks by campers. One way of significantly reducing this problem would be to rule that all packing for food and other usable items be combustible and trekkers be required to burn these before they leave a campsite.

Limestone outcrops

There are a number of beautiful limestone outcrops within the Park, a number with interesting cave systems. These outcrops need to be investigated and information sought on how they can be approached and their unique features made available to visitors. The unique biological features of these outcrops should be explained as part of the interpretive program.

Salt licks

Salt licks are a feature that allow visitors to see the very shy larger species of terrestrial wildlife that occur in the Park. These salt licks are provided with high hides overlooking them that allow visitors to spend the night watching for wildlife. Salt licks may be natural or artificial. Due to the increasing number of visitors to the Park it is not now possible to allow every person an opportunity to stay in a high hide. It therefore seems necessary to try and locate new salt licks or to create artificial ones to cater for the virtual doubling of visitor capacity at Kuala Tahan that is projected.

COMMERCIALIZATION

The policy concerning commercialization should at all time take into consideration the position and responsibilities of the DWNP with respect to administering Taman Negara. The commercialization policy should at no stage ever take away the power of decision of the Department to decide what development or day to day activities may or may not be carried out in Park as well as the extent and locations of such permitted developments or activities. This power is an integral part of DWNP's responsibility of ensuring that the provisions and principles of the Taman Negara Enactments are fully complied with.

Commercialization should have mutual benefits for both the government and the private sector. To the Government, it should mean a reduction in its personnel and expenditure burden. To the private sector it would be a means of earning money as a direct result of the better commercial efficiencies that are associated with the private sector and not simply by charging higher rates.

It would be against the spirit of the Taman Negara Enactments if commercialization only meant that the net result was that the Malaysian public had to pay more for what is virtually the same experience.

A second important principle concerning commercialization is that it should bring economic advantages to the people living in the Park area. This principle should also be viewed more seriously from its reverse angle in that commercialization should not result in an economic or employment loss to any one in the area.

The main activities in Taman Negara that can be regarded as commercially viable are:-

1. accomodation (including lodges and hides),
2. food outlets,
3. souvenir and convenience shops,
4. transportation into and out of the Park,
5. boating within the park, and
6. provision of guides.

WILDLIFE AND HABITAT MANAGEMENT

The Taman Negara environment shall be managed to preserve environment quality and wilderness, minimize impact to the environment due to visitor-use and development, and stabilize the ecosystem so as not to impair the health and balance of the Park's environment.

Management of habitat and wildlife should be undertaken after properly conducted investigation. Wildlife management and habitat improvement and manipulation should prioritize the managing of endangered species.

Hunting

Hunting in Taman Negara is incompatible with its objectives of preservation and protection and will not be permitted.

Predatory animals

No native predator shall be destroyed because of its normal utilization of any other park animal or plant, unless such animal or plant is in immediate danger of extermination, and then only if the predator is not itself endangered. Predator control shall be accomplished by transplanting, or if necessary, eliminating only surplus and dangerous animals.

Exotics

Plants and animals exotic to Peninsular Malaysia shall not be introduced into Taman Negara. These animals, if already introduced, shall be either eliminated or kept to a minimum by some form of culling if complete eradication is not feasible. Exotic plants shall only be introduced, if they are needed or necessary as food for endangered species of animal. However, the Park authority has to anticipate and take steps to guard against possible proliferation of that plant species.

Reintroduction

Native species of plant and wildlife, which may have been exterminated from Taman Negara, shall be reintroduced after a field feasibility study has been carried out. If a species has become extinct, no related species shall be considered for reintroduction into Taman Negara.

Harmful plants and animals

Plants and animals which are harmful to the public health, welfare or which are destructive to historic, archeological and scientific features shall be controlled. The decision shall be subjected to the approval by the Di-

rector-General, Department of Wildlife and National Parks, Peninsular Malaysia.

Artificial feeding

Artificial feeding shall not be encouraged, to prevent wildlife becoming dependent wholly or in part upon man for their support.

Captive animals

The use of cages or enclosures shall not be allowed to present the animals of Taman Negara to the visitor. The animals should be seen in their natural situations.

Domestic and feral animals

No domestic animals should be allowed within the Park boundary. Feral species should be eliminated from the Park.

Permits

Permits to collect any species of flora or fauna should only be for the purpose of scientific research and approval should only be given by the Director-General for Wildlife and National Parks Malaysia.

Fishing

Recreational fishing within Taman Negara shall be permitted with management programs directed towards the perpetuation, restoration and protection of native fishes and of the natural aquatic environment.

No-fishing area

Fishing may be prohibited in specific areas when necessary, to preserve and protect aquatic fauna, riparian habitat and spawning areas.

Stocking of fish

Artificial replenishment of fish stocking should be employed to reintroduce native species into rivers depleted of the species due to natural factors or over-fishing.

Fishery management

The conservation and proper management of the fishery resources and angling as a recreational activity is dependent upon a complete knowledge of the status of the fish fauna and the angling pressures being exerted. This is important as the objective is to preserve the fish populations and yet to allow angling with proper regulations.

A VIEW OF THE TAHAN VALLEY FROM BUKIT TERESEK


PART OF THE KUALA TAHAN REST HOUSE COMPLEX

ABORIGINES

There are between 200 and 400 Batek living in Taman Negara. This probably represents a larger population of Batek than has ever inhabitated the Park. This high population is likely to have two main causes. Firstly the groups that have lived within the area from historical times have in recent years suffered lower mortalities especially of infants since their access to government medical care. Secondly there appears to have been a significant migration into the Park from the north (Kelantan) and north-east (Trengganu) of Batek displaced by the opening of forests and other developments in those areas.

The principle underlying this aboriginal policy is that the value of the Park for all forms of wild flora and fauna is not diminished in any way. This means that while the orang asli are allowed to maintain their traditional lifestyles to a certain extent, they should not be forced by circumstances to over use and actually damage wildlife resources such as primates for food or to collect rattan for sale. The department has to be quite pragmatic in accepting the fact that a certain number of Orang Asli have always lived within its borders and will continue to do so in the future. Just as pragmatically the Department together with the assistance of the Orang Asli Department has to ensure the ability of these people to survive within the system of money economy. One way of doing this is to give some priority to the Orang Asli as guides and porters for visitors as well as for officers of the department on duty.

These roles are related primarily to their intimate familiarity with the interior and the less visited areas of the Park. Very often when Park Officers wish to trek through or to areas that they are not familiar with it is quite usual to employ orang asli as guides. In general this fact is applicable even for tourists who wish to visit both beaten paths such as that up to Gunung Tahan or areas that are seldom visited such as the Four Steps waterfall.

Another use in which the wanderings of these people through the Park can be used is as a source of information on the presence of rare of endangered species such as the Sumatran rhinoceros in areas that are outside the normal research routes of departmental rangers. They are also uniquely in a position to help in the overall development programme in the Park by revealing the best routes for walking trails, finding new natural salt licks and other areas of particular wildlife value. They can also help by bringing the attention of the park authorities to other places of research, touristic and recreational interest.

It should also be noted that the Taman Negara Enactments make no reference to the aboriginal population that naturally inhabit the Park. There is also a department that has jurisdiction over Aboriginal affairs and it is their general policy to integrate these people into modern society. For these two reasons there can be no policy regarding the preservation of the ethnicity of the Batek in Taman Negara in this document.

PART II

Resources and Characteristics

for butterflies, insects, reptiles, amphibians and bird species which are relatively easy to observe. Bird watching is particularly rewarding as the Park offers more than 300 species of birds half of which can be seen by an experienced bird watcher within a few days.

Water-related recreation

There are numerous clear, scenic and unpolluted rivers in the Park ideal for swimming, picnicking, 'shooting the rapids', canoeing, fishing, white-water rafting, relaxing and sightseeing.

Unique and wilderness experience

The vast hinterland offers great wilderness experience in the Park which could be beyond the expectation of an average visitor; a wilderness of the rain forest, wildlife, rivers, limestone outcrops, hills and mountains. For the robust and adventurous, the Park provides an opportunity to explore the unspoilt environment and face the challenge of backcountry camping and hiking. The challenge of apparently pitting ones strength and skill to survive in an environment that though benign can also turn hostile, is a way of revitalising one-self from the drudgery and spiritually sterile atmosphere in city environments.

Research and education

The extensive unmodified rainforest is a natural laboratory for scientific researches and study opportunities for numerous fields including ecology, botany, wildlife, forestry, fisheries, geology, anthropology and geography. It also offers the best form of environmental education through nature study centers, holiday camps and 'outward bound' type courses. The environmental education could enhance the understanding of this country's wonderful natural heritage, its uniqueness and also could develop a strong grass root conservation awareness.

Existing Infrastructure

Accomodation

Rest house and chalet

A 12-room resthouse and 11 chalets of two rooms each are available to park visitors at Park Headquarters at Kuala Tahan. Four VIP rooms are also available only for restricted use. There are two beds in each room and all rooms have attached bathroom and modern sanitation.

Hostel

There is a eight-room hostel having a total of 64 beds with bathrooms and cooking facilities attached. Visitors are charged nominally for use of the hostel.

Camping

There are tents available for hire. However, visitors are also encouraged to bring their own tents. There are several campsites available for use and a designated area set aside at Kuala Tahan.

Fishing and visitor lodges

Four lodges are available for visitor use. They are located at Kuala Trenggan, Kuala Kenyam, Lata Berkoh and Kuala Perkai. Limited bedding and cooking facilities are provided.

Power supply

A 230-volt generator is a source of power supply at Kuala Tahan headquarters. There is no electricity supply at the lodges and hides where kerosene lamps are provided instead.

Water supply

The main source of water for Kuala Tahan Headquarters is the spring at the base of Bukit Teresek. Water collected in a pond is channeled into the main tank and later piped to all park buildings. Periodically, supplementary supply is obtained by pumping water from nearby rivers. Campers normally obtain water directly from rivers because campsites are close to or on river banks.

Food and provisions

There are two restaurants operating everyday from 7.30 a.m. to 10.00 p.m. Local and western cuisine are offered. A small provision shop is available for purchase of groceries and sundry goods. Visitors are allowed to bring their own food and communal cooking facilities are provided.

Interpretive center

An Interpretive Center has been established for interpretive duties. It can hold about 60 people at one time. Slide programs or films about the Park or wildlife are shown here regularly.

High hides

There are five high hides overlooking salt lick which offer wildlife observation for interested visitors. All hides have beds and sanitation. Kumbang and Blau hides have 6 beds. The Yong, Cegar Anjing and Tabing hides have 8 beds each. All other hides are situated overlooking natural salt licks, except Cegar Anjing hide which overlooks a grazing ground and an aritificial salt lick. Kuala Tahan high hide allow visitors to observe sambar deer and seladang close to the headquarters.

Boat services

Boat services ferry visitors to and from Park headquarters. Internal boat services to hides, lodges and scenic areas are available. Two types of boats are used namely covered long boat for the main river system and long journeys and small boats for trips into smaller rivers.

Demography

There are a number of small Malay villages on the east side of the river (before Kuala Tahan) with low population densities. However densities opposite Kuala Tahan, there is a moderately high population density of about 100 persons. At Park Headquarters there is a concentration of 400 persons consisting mainly of Park staff and their families.

Upstream from Park Headquarters a number of villages such as Kampung Pagi, Kampung Bantal, Kampung Kuala Sat and Kampung Mat Daling with a total population of about 450 persons. The people living along the Tembeling are mainly farmers and fishermen.

The Orang Asli living in Taman Negara are Negritos, one of the three racial divisions of the jungle people to be found in the Peninsula Malaysia. The Negritos are the most primitive of these races being predominantly nomadic with a hunting and gathering economy. Yet in terms of jungle craft and forest orienteering they possess remarkable skills that are of use to visitors and research team.

The Negritos are subdivided into six tribal-linguistic groups of which the Batek form the southernmost group. This group is again subdivided into a number of dialectic groups. Taman Negara is the home of two of these dialectic groups, the Batek De and the Batek Iga.

There are between 200 and 400 Batek living in the Park and this represents between 40% and 80% of the Batek population in Peninsula Malaysia.

Socio-economic features and land use

Since its establishment, the Park has remained intact without any reduction in its area, without altering its status or changing its boundaries significantly. Without doubt it is the most outstanding natural forest park in Peninsula Malaysia.

As the remaining forests of the Peninsula Malaysia come under pressure from logging and land development, the world's oldest tropical rain forests will be reduced only to those areas which are gazetted as national park, game reserves or sanctuaries.

The main economic activity of the local villagers in the Tembeling area is rubber growing as cash crop. Fruit trees are planted in small plantation or around houses. Malays from adjacent villages and aborigines living in and around the Park work as guides especially for trips to Gunung Tahan. Some Malays operate private boat services to supplement the Park boats especially during periods of high visitor arrivals.

The gathering of forest produce among Malay villagers is much reduced as they have developed other sources of guaranteed income. This, however, is still an important source of income for the aborigines. Specialists in boat making live in villages at the upper Sungai Tembeling. Fishing is for personal consumption and almost all families rear water buffaloes which are then sold at Kuala Tembeling or slaughtered locally during special occasions such as weddings and festivals.

State land adjacent to the Park western boundary has been opened for oil palm plantation by the Federal Land Development Authority (FELDA). The Kuala Lipis – Gua Musang highway is built along the western boundary and passes through the south-western tip of the Park.

Just adjacent to the northern border of the Park in Kelantan there has been massive land development under the development authority for the area (KESEDAR) which has transformed forest land into oil palm and rubber plantations. This has had serious effects on the wildlife of the area with many of the larger and more mobile species seeking refuge in the Park.

Another serious effect of this development has been water pollution and sedimentation of all rivers just outside the Park. This would have had a negative effect on the river approach to the proposed visitor center at Kuala Koh.

The eastern region of the Park in Trengganu has been partially submerged by the Kenyir Dam. This has made the area more accessible to fishing parties and poachers. Thus, the Trengganu State Wildlife Department has to regularly patrol the area. Logging is still going on close to the eastern borders of Park.

Regional Analysis

A steady annual increase of visitors to Taman Negara is proof of its attractiveness and uniqueness. Bus and taxi operators through their services benefit economically as do the restaurant, food stall, and sundry shop owners who provide convenient services to visitors. Hotel operators provide employment to locals as well as providing services to the passing Park visitors. The handicraft industry at Pasir Durian (about 16 km from Kuala Tembeling) could take advantage of the increased number of visitors to the Park.

Tour agencies will gain the most directly from the flow of visitors to Taman Negara. Tour guide operators provide package tours to the Park.

Local villagers will benefit from the construction of a jeep track from Jerantut to Kampung Kuala Tahan. This mode of entry into the Park will be used by some visitors. This may bring benefits to the villages along the way.

GEOLOGY

Sedimentary rocks account for about 83 percent of Taman Negara. The 17 percent igneous rocks are found in the eastern part of the Park in two places. First is the mountains that divide the valleys of the Sungai Sat and Sungai Spia. Second are the mountains around the Mandi Angin Massif that sit on the boundary of Pahang and Trengganu. These two sections are in fact one continuous formation of acid intrusives.

The sedimentary rocks represent four different eras from the Carboniferous to the Cretaceous-Jurassic.

The Carboniferous rocks exist as a single block in Trengganu in the valley of the Sungai Pertang north of the Mandi Angin Massif. This series exist mainly as phyllites, shales, slates and sandstones.

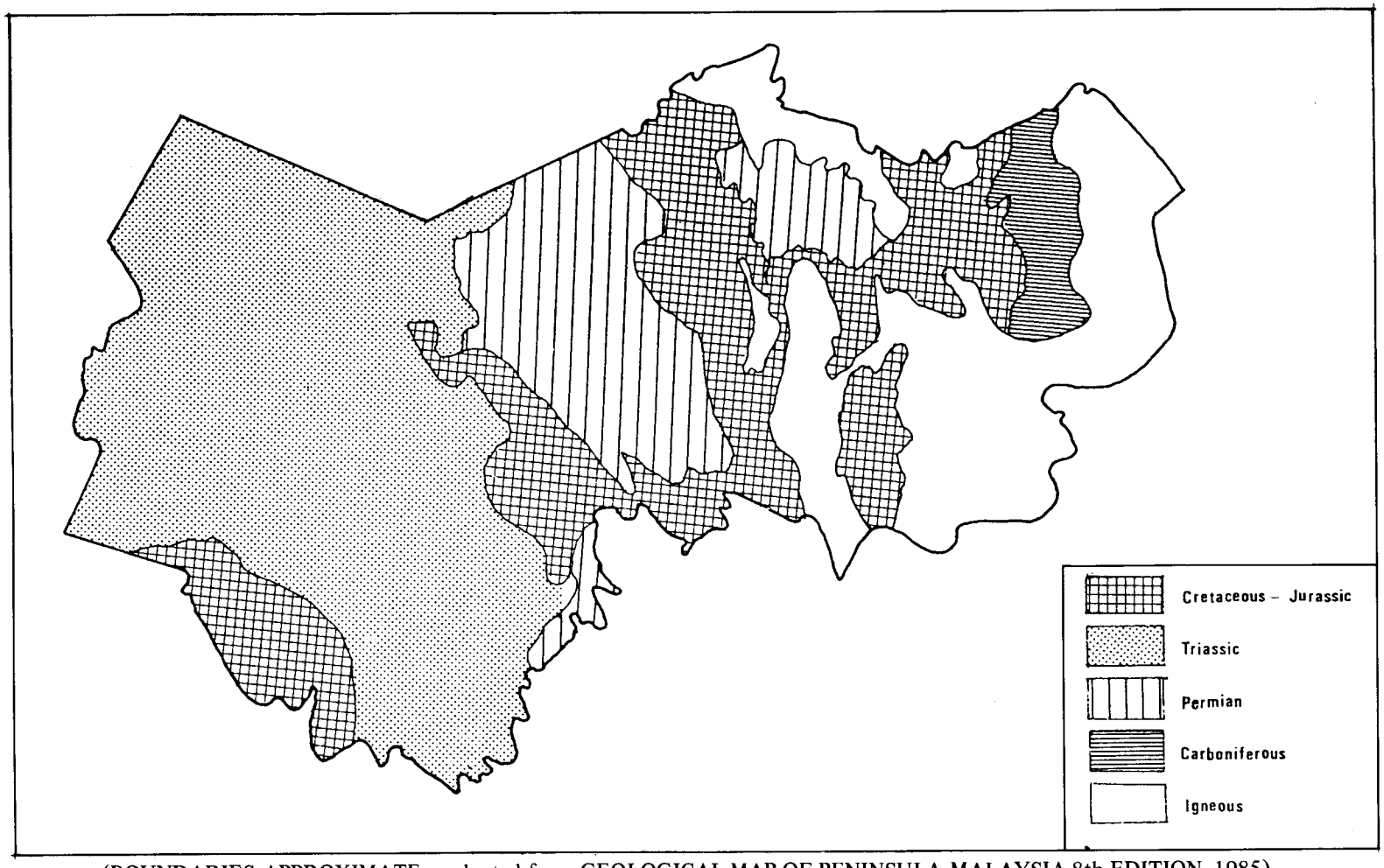
The Permian rocks exist as two main blocks. The first and smaller of these exists in the extreme south-west corner of the Park mainly in the valley of Sungai Tekai (tributary of the Jelai). The second and main block in the Park occupies the valley of Sungai Tembeling from about Kuala Kenyam to Kuala Spia with two horns moving northwards from each end of this block. The eastern horn occupies the lower Kenyam valley, and narrows rapidly as it crosses the watershed into Kelantan to briefly intersect the Aring and Relai valleys. The second and much broader horn occupies the valley of the Sat and continues northward into the Lebir-Badong valley.

These Permian rocks are mainly phyllites, slates, and shales with subordinate sandstones and schists. They are also characterized by prominent limestone development. This is especially true of the rocks in Kelantan (western horn) which are characterized by limestone and marble. The eastern horn in Kelantan on the other hand is characterized by intermediate to basic extrusives. This is centered mainly in the basin of the Lebir. To the east of this on the waterhead divide between the Badong and the Pertang (tributary of the Sungai Kelantan) there is a prominent conglomerate formation.

A formation of Triassic rocks dominate the western section of the Park and includes the valley of the Tembeling up to Kuala Tahan, almost the entire Tahan and Atok valleys, the upper reaches of the Tekai (tributary of the Jelai) and the Tanum in Western Pahang and the upper reaches of the Relai and Aring in Kelantan. The Tahan and Rabong massifs and the mountains in between are also part of this same block.

These Triassic rocks are mainly interbedded sandstones, siltstones and shales with a few prominent limestones. Of note within these formation is Gua Peningat the highest limestone outcrop in Peninsula Malaysia.

MAP 1 GEOLOGY OF TAMAN NEGARA



(BOUNDARIES APPROXIMATE – adapted from GEOLOGICAL MAP OF PENINSULA MALAYSIA 8th EDITION, 1985)

The last formation of sedimentary rocks belong to the Cretaceous-Jurassic era. One major block exists between the Kenyam and the Sat running north into Kelantan into the valley of the Koh and including the Perlis and Penumpu massifs. A second formation exists around the Gagau massif with its largest area in Kelantan. Finally the edge of a large block that exists on the southern bank of the Tembeling valley just intrudes into the Park area between Kuala Tahan and Kuala Kenyam. The Tembeling gorge and its spectacular rocks are a part of this formation.

The Cretaceous-Jurassic rocks are thick cross-bedded sandstone deposits with subordinate conglomerates and shale/mudstones.

CLIMATE AND WEATHER

Due to the proximity of the equator, climatological conditions vary only marginally in the course of a year in Peninsula Malaysia. The weather in the south of Taman Negara is characterized by permanent high temperatures (not below 20 degrees celcius at night, and not above 35 degrees celcius in the day time), high humidity (above 80%). Periods of sunshine in the morning are usually followed by heavy thunderstorms in the afternoon, sometimes accompanied by severe gusts of wind.

Under the influence of the Northeast monsoon and the Southwest monsoon, there are periods in the year in which precipitation is higher or lower than the yearly average, but in certain years, this may deviate from the usual pattern. There is a period of heavy rainfall from December to February, as a result, large tracts of the rainforest are flooded. The highest rainfall occurs in October-November when about 312 mm of rain falls, while the lowest rainfall is in March with only about 50 mm.

The climatological conditions in the rainforest differ in the various strata of the forest. Near the ground, temperature and humidity are much more stable than at canopy level, which are subject to far greater fluctuations due to the influence of sun, rain and wind. The moderate climatological conditions near the ground are evidently caused by the tempering influence of the solid vegetation cover.

A VIEW ACROSS THE TERU GORGE

WATERSHED AND DRAINAGE PATTERN

Taman Negara lies in the center of West Malaysia athwart the boundaries of Kelantan, Trengganu and Pahang and includes the headwaters of three major river systems, the Relai-Aring-Lebir, Trengganu and Tembeling in each state respectively.

Taman Negara (Kelantan) is drained by 4 major river systems – the Relai in the west, followed by Aring, the Lebir in the center and Badong lying to the East. These rivers drain in the northerly direction into the main Lebir river which flows north through the towns of Kuala Krai, Tanah Merah, Kota Bharu and into the South China Sea.

Taman Negara (Trengganu) is drained by the Trengganu river which originates in the mountainous interior of the state, near the Kelantan and Pahang state borders at elevations of up to 1,500 m above sea level. The main rivers that drain the Park into the Trengganu river are the Trenggan river (with its tributaries the Chaching and the Perepek) and the Pertang river.

The Sungai Tahan and Sungai Teku, the headstream tributaries of Tahan River System, originate from Gunung Tahan, the highest peak (2187 m above sea level) in Peninsula Malaysia. They flow down through steep sloped valleys of thick, high altitude primary forest and merge at Kuala Teku, about 22 km from the source. From Kuala Teku, the river valley has a much gentler slopes that are still covered in lowland dipterocarp forest. Many tributaries join Sungai Tahan before the confluence of Sungai Tembeling. The other major river flowing into the Tembeling are Sungai Atok, Sungai Trenggan, Sungai Kenyam, Sungai Sat and Sungai Spia. The western side of the Park in Pahang is drained by tributaries of the Jelai, Sungai Kechau and Sungai Tanum. The upstream tributaries, such as Sungai Tahan and Sungai Teku can be classified as highland or 'Saraca' type streams. Other tributaries can be grouped under lowland or 'Neram' type streams, because of the presence of Neram trees along river margins.

FAUNA

The lowland dipterocarp forest, which constitute about 57.6% of the Park area, is rich and diverse in the faunal community. Abundant food plants, a variety of habitat types and the major drainage systems provide all the necessary living requirements for the wildlife. Elephant *(Elephas maximus)* herds are distributed mostly in Ulu Atok, Ulu Kenyam, Chamir, Ulu Aring, Kuala Koh, Sg. Trenggan (Trengganu), Sg. Kerbat, Jenut Kumbang, Jenut Reking and the adjacent Empang Kenyir. The population is estimated to be more than 160 animals. The rare and endangered Sumatran rhinoceros *(Dicerorhinus sumatrensis)* is found in most major river system and is estimated to be about 12–20 individuals. Seladang *(Bos gaurus)* is fairly common in Atok, Sg. Tenok, Sg. Kechau, Kenyam Valley, Sg. Perkai, Pring valley, upper Trenggan and Sg. Chonchin. Other mammals found in the Park are tapir *(Tapirus indicus)*, sambar deer *(Cervus unicolor)*, tiger *(Panthera tigris)*, wild pigs *(Sus scrofa)*, barking deer *(Munctiacus muntjak)* and mouse deer *(Tragulus spp.)*. The Malayan wild dog *(Cuon alpinus)* and yellow throated marten *(Marten flavigula)* also occur in Taman Negara. The diverse habitat contains about 54% of the 575 bird species known in Peninsula Malaysia. The hill prinia *(Prinia atrogularis)*, and crested argus *(Rheinardia ocellata nigrescens)* are endemic in the Park and its environs. There are also 53 fish species known in Tembeling. Sebarau *(Hampala maerdepidota)*, sia *(Mystacholeucus marginatus)*, jemerong *(Lubocheilus rhadbura)* and kerai jelawat *(Puncuis halei)* are most widely distributed species.

The lowland Dipterocarp forest, which constitute about 57.6% of the plants. The great richness of this tropical rain forest is illustrated by a hectare plot that contains more than 100 of tree species, while the Shannon-Weiner Index of diversity for a lowland forest ranges from 0.99 to 1.17.

The Park's vegetation communities range from the humid tropical rain forests of the lowland, to the montane oak and ericaceous forests of the higher elevations. The rain forest consists of tall evergreen trees that attain heights of between 30–50 m. It is typically very damp and rich in woody herbaceous epiphytes, as well as thick stemmed lianes. It is also rich in woody tree species and a large percentage of the known species occur in the lowland region. Meranti *(Shores spp)* and keruing *(Dipterocarpus spp)*, both members of the dominant lowland forest family of Dipterocarpaceae, are common and frequently occur in association with the tall, buttressed tualang *(Koompassia excelsa)* which is the third tallest tree species in the world and the tallest tree in South East Asia. Most of the wild varieties of our cultivated fruit trees occur in Taman Negara. These include wild durian *(Durio spp.)*, petai *(Parkia spp.)*, terap *(Artocarpus spp.)*, langsat *(Lancium spp.)*, rambai *(Baccaurea spp.)*, rambutan *(Nephelium spp.)*, macang *(Mangifera spp.)*, manggis *(Garcinia spp.)*, putat *(Baccaurea grifithii)*, ara *(Ficus spp.)*, and jambu *(Eugenia spp)*. The understory trees and shrub community consist of the families Euphorbiaceae, Rubiaceae, Annonaceae, with *Memecylon spp, Helicia spp., Eugenia spp., Garcinia spp., and Gironniera spp* being typical genera. Pucuk paku *(Athyrium esculentum)*, the edible fern, is abundant on the edges and forest opening. The bird's nest fern *(Asplenium nidus)* and the stag horn fern *(Platycerium coronarium)* are common tree-crown epiphytes.

Some of these forest resources are utilized by the Orang Asli includes building materials, fuelwood, fruits, medicinal plants, rattan *(Calamus spp.)* and resin. Thus, the lowland rain forest is of great economic value to Malaysia and the stands of trees protected within the park have long been regarded by foresters as an excellent control for the silvicultural research being carried out elsewhere.

The forests of the higher elevations are generally reduced in height. The canopy consists mostly of oaks *(Fagaceae)* and some conifers *(Dacredium spp., Podocarpus spp.,* and *Agathis spp)*, and the shrub layer has many rattans and dwarf palms *(Arenga spp* and *Licuala spp)*. The abundance of epiphytic orchids, mosses, and ferns decreases with increasing altitude until the "cloud forest" is reached at 1880 m elevation. Here the trees are typically short and surrounded by low-level clouds at least part of each day. The excessive humidity enables the forest to become festooned with luxuriant growths of bryophytes, lichens, and ferns, and even the ground and fallen logs are clothed with mounds of sphagnum moss.

At the summit of the highest hills ericaceous species *(Rhododendron* and *Vaccinium spp)* predominate. The hills of Malaya are covered with vegetation since even the highest peaks are too low to be affected by a natural climatic-line.

The riparian vegetation is characterized by medium size trees which include neram *(Dipterocarpus oblingifolius),* mempening *(Lithocarpus wallinchianus),* and berangan *(Castanopsis spp.).*

The flora of the Park has never been significantly disturbed since its origin. While forests in the rest of the world have experienced the extinction of many of their early floral species, the composition of the Malayan forests has remained relatively unchanged because of its location in the Asian tropics. This has allowed the development of the flora to be constant and new species have evolved in place, while some others have not changed. The animals have evolved as part of this floral community and it is very probable that without reserves protecting this forest environment, many species will become extinct within the next century.

CULTURE AND HISTORY

Tradition and cultural pastimes of the Tembeling are rich and relatively unchanged because this area is out of the way of the mainstream of modernization in the country. It is not entirely culturally isolated however, as traditions identifiable with Dungun in Trengganu, and Ulu Kelantan, are evident. Observations of tradition and cultural pastimes can be broadly classified under narratives (mainly folk tales and local legends), folk beliefs and folk medicine, folk songs, dances and games, genealogies and historical reminiscences, and material culture.

The long narratives, which are sung and told in a stylized manner, need accomplished raconteurs to present them. Such tales are told while working in the rice-fields or perhaps on a fishing expedition, i.e. the story-telling art is closely associated with group work. Furthermore, the art now seems to be confined to the older generation.

The principal cultural activities evident in the upper Tembeling – traditional story-telling, religious chants and secular songs, work plays, and pantuns (four line poems) – are all fostered by group activity. There is clear evidence that these cultural pastimes are already dying out. Chants, both religious and traditional secular, survive in the upper Tembeling communities, mostly amongst middle aged women. Folk songs are also present, sung in accompaniment to a work-dances (main pulau) performed while weeding the padi-fields or tending the nursery beds. Chants are usually accompanied by a drum beat, and a short bamboo flute is sometimes played as a solo instrument.

It is clear that the web of kinship is finely woven among the people of the area especially among those who bear the hereditary title of 'Wan'. The important families of the area belong to this class of people, and they are the principal landowners, frequently renting plots to others. Both the Penghulu (the administrative head of the Mukim of Ulu Tembeling), and the influential political leader, bear the title 'Wan', and are related. This family can trace its history back to Wan Ismail who was one of the local chiefs who helped Tengku Ahmad found the Pahang ruling house in 1863. A further aspect of kinship is the high degree of inter-relationship through marriage between families, and hence the extensive and close inter-connections between families and communities.

UNIQUE AREAS

Taman Negara is in itself a unique area in that it provides the nature lover an opportunity to wander through unspoilt tropical forest systems with their fascinating flora and fauna, its unspoilt streams and pristined nature. But in addition to this, the Park has also a number of features that are unique such as recreational features for the general visitor or visitors with special interests. Four such features are being highlighted in this section but by no means should this list be considered exhaustive.

The Tembeling Gorge

Just upstream of Kuala Tahan, the Tembeling river flows through a gorge comprising the Permian formation of sandstone conglomerate rocks. While there may be many other rivers with similarly spectacular formations and white water systems, this length with its seven distinct rapid sections is perhaps the only white water boating that is widely enjoyed by visitors in this country. Shooting the rapids of the Tembeling Gorge is one of the highlights of the visit to Taman Negara for most visitors. This is made all the more memorable because the boatman of the Tembeling, particularly Park boatman, are perhaps the most skilled river boatman in the Peninsula Malaysia.

Gunung Tahan

The Tahan massif rising up to 2,187 meters above mean sea level, dominates the heart of Taman Negara and is the highest peak in Peninsula Malaysia. Its uniqueness lies not in its height, because there are two other mountains in the country of nearly the same height. It is unique because it represents a challenge *par excellence* for the mountain trekker. Although about half the height of Mount Kinabalu in Sabah, it is acknowledged that climbing Gunung Tahan is far more difficult and represents a greater challenge to the mountaineer than Kinabalu. It has been estimated that, in ascending Gunung Tahan, a climber actually climbs more than 4500 meters. The ascent up this mountain also provides the opportunity to trek through lowland and submontane forest and practice ones skill of camping in the wilderness.

Kenyir Dam

The Kenyir Dam in Trengganu has flooded a part of Taman Negara in that State. This inundated the main river approach to the Trengganu part of the Park and prevented any further consideration of a Kuala Tahan type development for the area. However the creation of a large lake does present the opportunity to consider and plan a visitor center with a greater emphasis upon water related recreation. This center could specialize in fishing, sailing and other forms of boating and if technically feasible could even be built as a floating visitor complex.

Limestone Outcrops

Karst topography is found in many parts of Peninsula Malaysia. Examples are the magnificient limestone hill of Perlis and those south of Ipoh. But in these and many other areas, the limestones hills exist in highly developed or distrubed environments. The National Park can boast several large limestone outcrops, still existing as they have done for millions of years and still surrounded by undisturbed forests. The most significant of these is the Gua Peningat outcrop in the western part of the Park which at 713 meters is the highest limestone massif in Peninsula Malaysia. There are a number of other large outcrops of limestone within the Park area of different sizes and accessibility. Of note is Gua Telinga in the Tahan which has a stream running through the main cave system. Two other outcrops regularly visited in the Park are Gua Daun Menari and Gua Besar in the valley of the Kenyam river.

FACTORS AFFECTING RESOURCE USE

Factors that can affect resource use are both tangible and intangible, both natural and man made. The major such factors are legal, economic, physical, climatic and threats that may damage or destroy the forests of Taman Negara.

The main legal factor that governs use of the Park is embodied in the legislation that brought the Park into existence i.e. the Taman Negara Enactments of the three states concerned. This legislation does provide for the park to be developed for recreation which means that visitors are to be allowed to visit some of the areas that are of interest to them.

However it is abundantly clear that this and any other use of the Park are to be subject to its primary function, that of preserving in perpetuity its unique flora and fauna and other features.

Physical factors also play an important role in the use of resources for visitors. Even Park headquarter which is relatively accessible suffers from problems of logistics, supply and communication. For example the development of chalets and the rest house complex required that almost all material had to be laboriously brought up river from Kuala Tembeling, which increased construction costs significantly. The situation with high hides in the forest is even more difficult with material having to be manually carried sometimes deep into the forest.

Funding also plays an important part in how the resources of the Park are made available to visitors. The amount of funds available will regulate the following visitor facilities:-

1. the size and general standard of high hides overlooking salt licks,

2. the number, size and standard of lodges, and

3. the availability of boats for journeys to from and within the Park.

Funding also has regulated the quality and quantity of accomodation at Park headquarters.

It should also be noted that the Park has thus far been run as a service with overall returns not exceeding 25% of the total direct cost of running the Park. (This situation should be reviewed only in conjunction with those principles laid down in the section on Visitor Policy).

The climate, specifically the North-east monsoon, plays the role of closing the Park to visitors from the middle of November to the middle

of January. The main reason is that the Tembeling river approach during the floods is hazardous. It is also true that during this period other activities in the Park such as swimming, fishing, boating and even trekking are severely curtailed. The dry season or to be more specific, extreme dry seasons can also have the effect of making river journeys slow and difficult to a shallow river.

Taman Negara faces both major and minor threats. The latter take the form of the occassional poacher, rattan collector and fisherman using poisons, homemade bombs and electric shock devices. These activities tend to occur on the periphery and have a temporary effect as the ecosystem is able to recover itself.

The major threats are the possibility of large scale logging, road construction, dam building and the conversion to agriculture or forestry plantations.

The soils and the gradient in Taman Negara are generally not suitable for agriculture. However the country is still in a process of land development for agriculture. The land available for this purpose is now very limited and it is possible that in time there may be pressure that areas within the Park be utilised for this purpose. Also possible is conversion of parts of the Park to monoculture forestry plantations.

Two other recent projects that would have caused damage to the Park are dams for hydroelectricity and road systems within the Park. In Trengganu, the Kenyir Dam has drowned what many have regarded as the most beautiful major river in Taman Negara. In Pahang, the proposed Tembeling hydroelectric project remains a constant threat. This project if implemented will drown the largest single block of lowland forest in th Park.

The tremendous attractiveness of the rich timber potential of the Park is a factor which could affect its long term survival. There are always those who would like to profit from this potential and are wise enough not to seek profit directly. Rather they seek to have other development projects initiated that require the land and use such situations to obtain their goals.

VISITOR USE OF RESOURCES

Trend

A steady increase in number of park visitors is observed when one make a close study on total number of tourist from 1969 to 1986. In 1969 only 516 visitors came to Taman Negara while in 1986 there were 12,571 visitors. Over this 18 year period there has been a dramatic annual increase in the number of visitors especially after 1974.

There is a distinct double peak in visitor arrivals, that is in April and August. There has also been a shift in the local/foreigner visitor ratio. In 1981, local visitors comprised only 45% of the total visitors arriving at Kuala Tahan. In 1982 the percentage of local visitors exceeded 51% and today stands at about 60% of all visitors.

In 1985, the highest number of foreign visitors were West Germans followed by Singaporeans, British and Austalians. In 1986, the highest number of foreign visitors was still West Germans (982) followed by Singaporeans (948), British (669) and Americans (371).

The most popular activity are river trips through rapids on the Tembeling Gorge and up Sungai Tahan. Most less adventurous visitors such as those coming in through tour agencies and family local groups enjoyed these trips. Short jungle trekking is very popular with visitors and almost all European visitors spent at least one night in a hide. Young energetic visitors with the time to spare favour long jungle treks such as the climb up Gunung Tahan.

Visitor relations

Visitors could be classified into two broad categories; the low budget visitors and affluent visitors. Low budget visitors are usually adventurous in nature. These two groups perceive what is offered by the Park differently. Affluent visitors anticipate a high standard of accomodation. The resthouse and chalets with minimal facilities are often not up to their expectations because they have been given misleading information by tourist agencies and are paying rates that justify such expectations. In contrast, low budget visitors are generally surprised to find well developed recreational facilities which they had not expected.

Some visitors are also given misleading information by tour opeators that wildlife can be easily seen in Taman Negara. This matter is often a subject of complaint on the part of visitors.

PART III

Planning

THE PLAN

The resources of Taman Negara are the product of the interplay of natural processes and man's activity. It is the duty of the Park service to protect the resources from abuse and alteration by man through proper management.

This plan is based on the concept that the resources of Taman Negara can be protected from man's abuse and, at the same time, that the Park can provide recreational opportunities for its visitors. Development and use have to be spread out to avoid overuse of any given resource or area, providing for the use of all resources in balance with their capability to be used without damage, and providing for only those uses for which Taman Negara's resources are well suited. The recreation objective is to provide natural environment, unique and wilderness recreation opportunities to the public without impairing the environment and without reducing the quality of experiences. Therefore, it is important to maintain the wilderness atmosphere while providing the highest level of use and users.

Use Capacity

Taman Negara has an abundance of recreation opportunities. The largely diverse landscape of rainforest, uncivilised land area and scenic rivers are important recreation resources providing good mixture of quality undeveloped areas. Being a unique and an uncommon area in Malaysia, there is an increasing recreational demand for the wilderness in Taman Negara. However, the Park has to control the number of visitors through a permit system, so that the long-term goals of conserving and preserving the rainforest ecosystem can be achieved. It is also important to maintain the natural, unique and wilderness experience for the visitors. Since recreational demands in Taman Negara are anticipated to be high in future, the Park has to provide for maximum possible number of visitors maybe up to its optimum carrying capacity. The social needs of the public for recreation need to be considered at the present time.

Recreation carrying capacity is the number of recreation opportunities that a specific unit of recreation resource can provide yearly without appreciable biological or physical deterioration of the resource or significant impairment of the recreation experience. The amount of appreciable biological and physical deterioration of the resources depend on the management goals of the Park. The allowable impairment of recreation experience are based on the recreation objectives and set levels of use. This calls for a planned framework for limiting use, in order to preserve wilderness quality. Then, recreation carrying capacity can be calculated or estimated by:

1. the number of facilities that can accomodate visitors,

2. the level of use an area can support (ecological),

3. the environmentally acceptable limit (physical), or

4. the level of crowding, the wilderness experience that can be sustained.

As the main goal for the Park is to conserve and preserve the rainforest environment, the carrying capacity calculation should be centered on the ecological (biological) and physical impact caused by the users. However, this is difficult to do and mistakes are commonly being made. If a management mistake is made, the ecological balance of the ecosystem may not be restorable. As for the overall crowding of resources by users, it is unlikely that this will occur in this Park, as it has abundance of recreation resources, allowing for many different instances of participation in its vast area. The only limiting factor, is the number of boats available to transport visitors, into the Park and the available accomodation at Kuala Tahan. Since the Park experience overcrowding at times around the Park headquarters, the carrying capacity can be calculated by the available accomodation at Kuala Tahan. This is using the recreation capacity of sustained yield carrying capacity.

The supply of recreation opportunities can then be calculated using the facility-units available in the Park. Facility-unit measurement, should be used because it is fairly simple to inventory and analyze and only an indicator is necessary to estimate the carrying capacity that the Park headquarters can sustain.

ACCESS AND CIRCULATION

Several proposed areas are described in this section. These are proposed areas for development and will be further reviewed subject to funds, the overall effects of the development and the concurrence of the state concerned.

Existing access and circulation were described earlier in the report. Both access and circulation are inadequate and require new development. At present, a recreational visitor center has been developed at Kuala Tahan of Taman Negara. It is equipped with modern facilities and has already reached its maximum capacity of about 10,000 visitors a year. As is the current practice with parks of other countries, the department felt that new visitor centers should be developed to take some of the visitor pressure as well as to disperse development and visitor activities. Thus, this calls for the development of Kuala Koh and Kuala Pertang (on the north), Sungai Pertang and Sungai Chaching (on the north-east), Sungai Tiang (south of Kuala Tahan) and Kuala Cheruai (on the west). An alternative to Kuala Cheruai is Kuala Juram which is suitable for a smaller visitor center. This site is suitable as a starting point for mountain climbers who want to climb Gunung Tahan from a base closer than the present approach from Kuala Tahan.

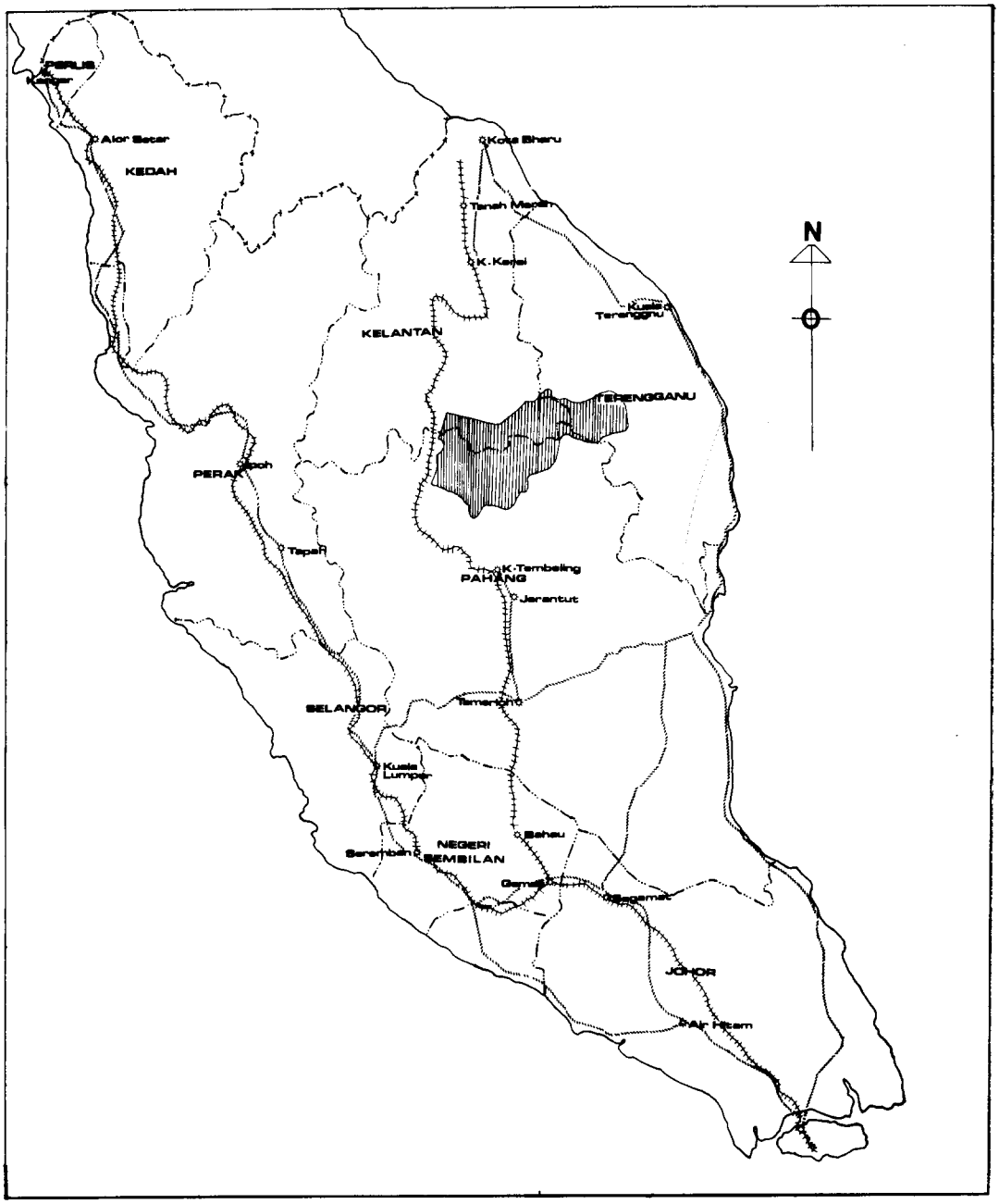
Access to Kuala Cheruai

The terrain between Merapoh and Kuala Cheruai appears gently undulating from the air. This is confirmed in the topographical map of the area. But in reality, it is quite deeply dissected by steep sided gullies, and this would make road construction less straightforward than it might initially appear. If a slightly less direct route is followed, advantage can be taken of ridge crests which tend to have relatively gentle slopes and have the additional advantage of requiring minimal cuts and fills in road construction, thus reducing soil disturbance and stream pollution.

From the highway at Kg. Merapoh Lama a logging road extends approximately 7.5 kilometers to the south-east, meeting Sg. Relau near a suitable bridging point. With minimal effort this road could be reopened and surfaced to provide all weather access for four-wheeled drive vehicles. With a bridge across Sg. Relau, a route can then be found into Kuala Cheruai following ridge crests most of the way. The distance is approximately 11.5 kilometers.

Circulation within Kuala Cheruai

Kuala Cheruai as a visitor center will be able to offer a number of recreational activities which includes swimming, boating, fishing, wildlife observation from high hides, jungle trekking and camping. It is essential that these activities are sufficient to adequately cater for the recreational needs of the maximum possible visitors.



MAP 2 ACCESS TO TAMAN NEGARA WITHIN PENINSULA MALAYSIA

High hides

Two areas have been identified so far as potential for high hides. These are both natual salt licks and are known as Jenut Reking and Jenut Atok. The high hides at these two salt licks should be designed for overnight stays. Attempts should also be made to find more natural salt licks within the general area or to find suitable sites for the establishment of artificial salt licks and pastures. It is also desirable to establish an artificial salt lick on the north padang at Kuala Cheruai and build a high hide here along the lines of the hide at Kuala Tahan.

Swimming

While it will await further study of the river near Kuala Cheruai to find good and safe swimming pools, one such possible pool has been identified on the Cheruai river just above Kuala Seladang.

Boating

The rivers in the immediate vicinity of Kuala Cheruai are suitable for both power boats and self paddled canoes. As further planning takes place the exact river stretches that are best suited for these purposes as well as a suitable site to moor the boats, can be established.

Fishing

Specific areas for fishing will be established on the Tanum and Relau rivers and their tributaries. Fishing lodges may also be built to accomodate small fishing parties at points that are reasonably far from Kuala Cheruai.

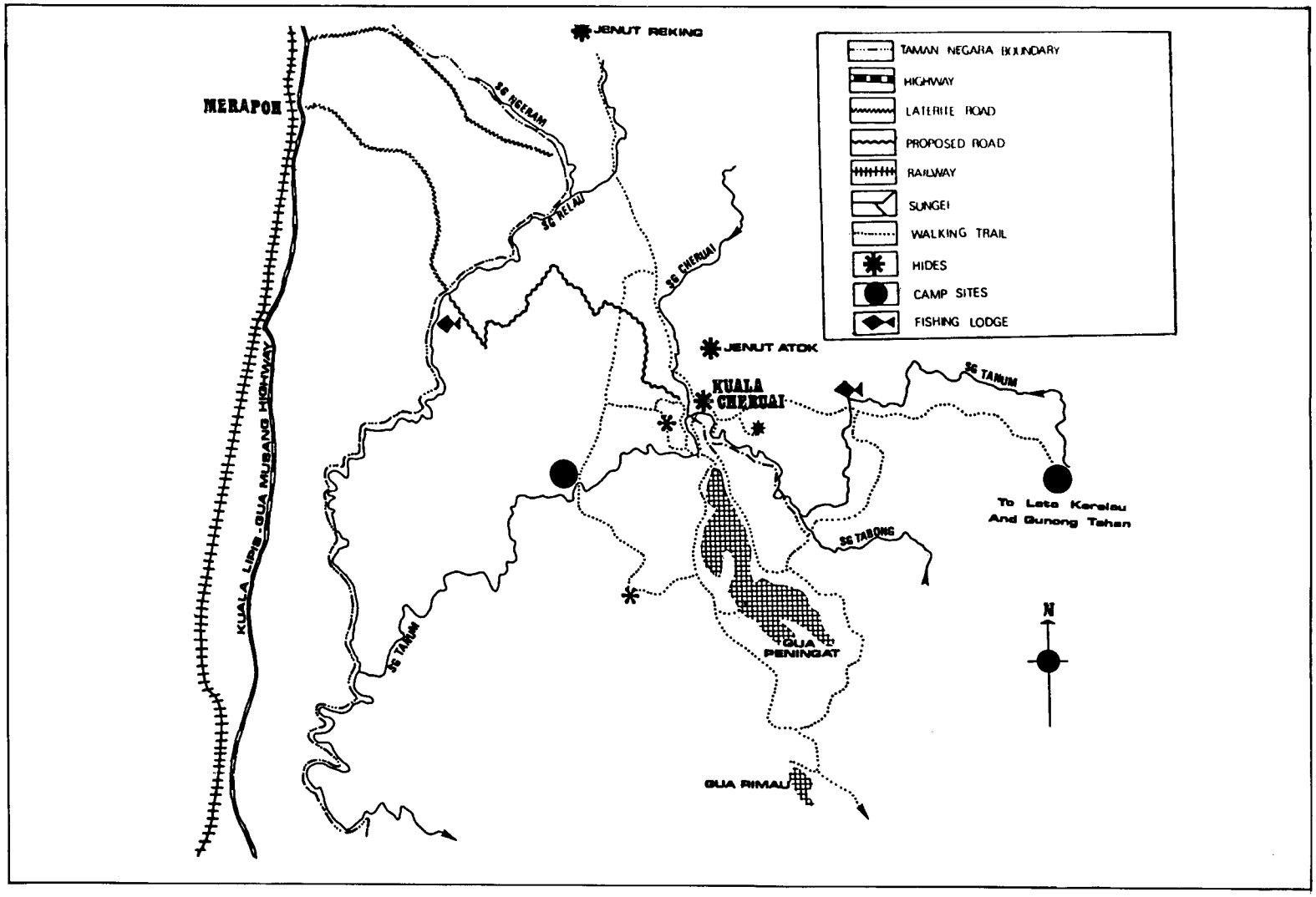
Camping

Sites suitable for camping have been identified at Kuala Siamang, Gua Riman, Kuala Tabong, and along the proposed trail up to Gunung Tahan. These campsites should be developed as far as possible with full convenience as described in the section on recreational facilities.

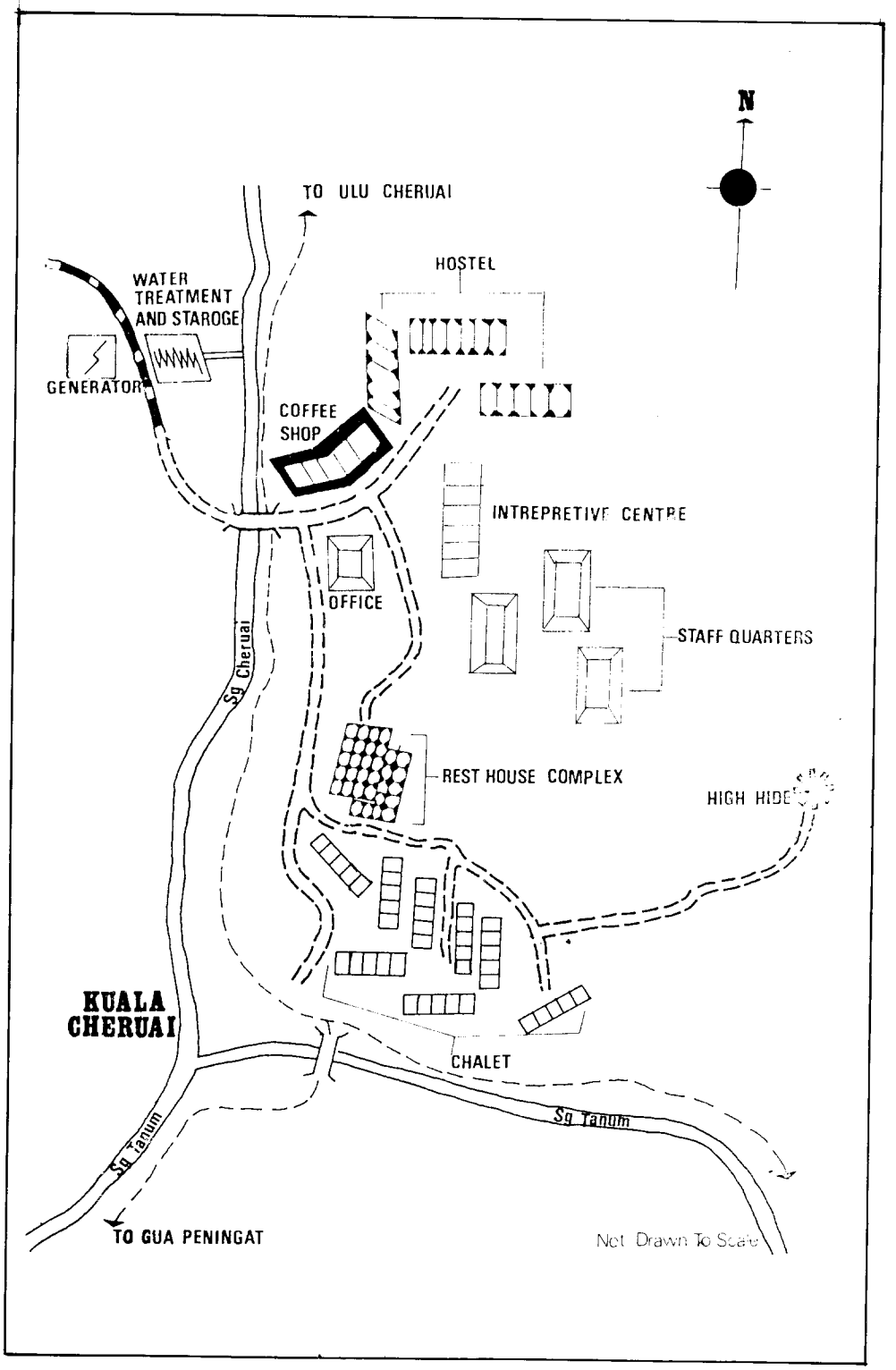
Walking trails

A number of trails have been planned from short walks lasting about 2 hours to extended walks of between 2 and 4 days culminating it the climb up to Gunung Tahan which should last about 5 days.

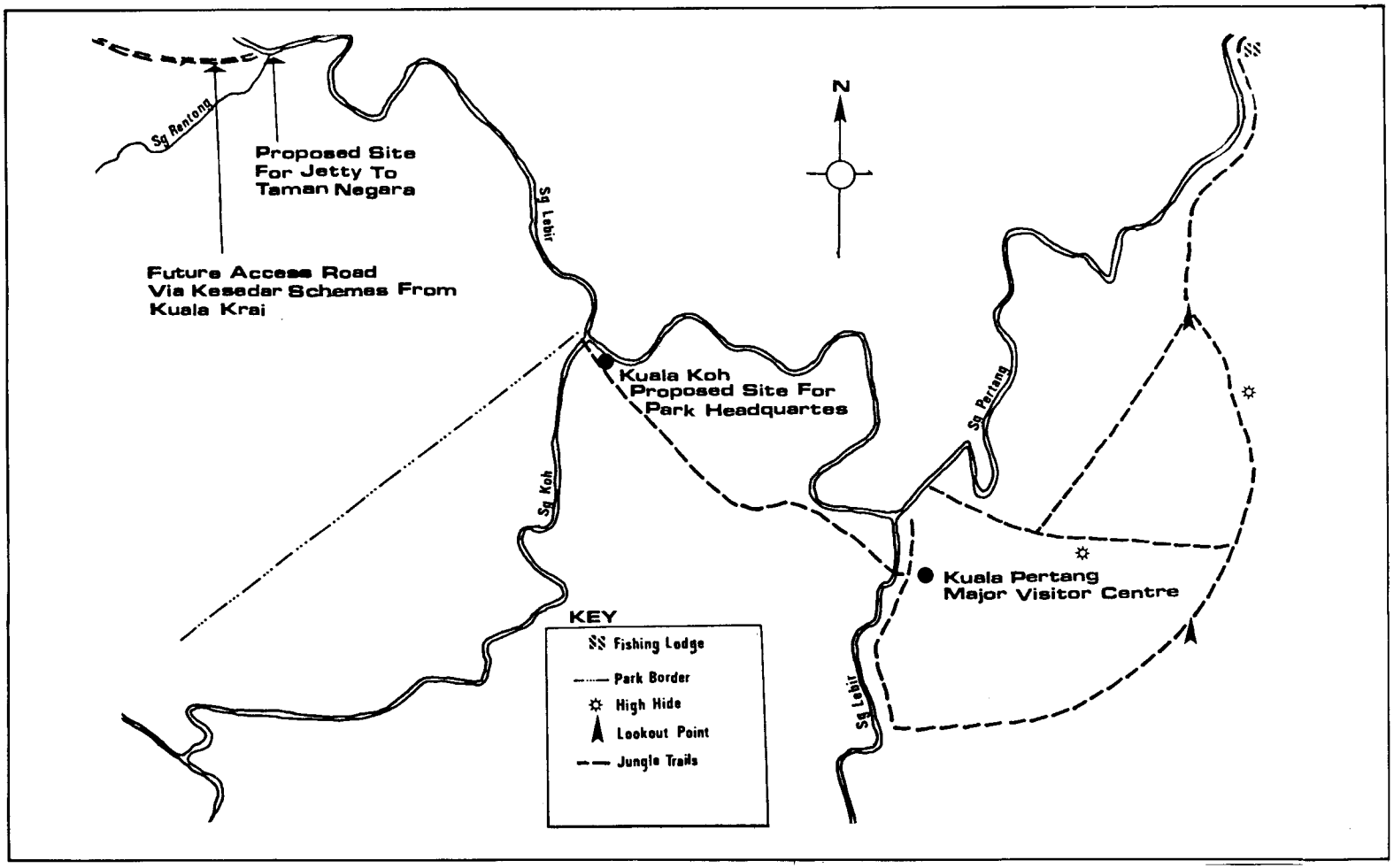
NATURES BOUQUET — FUNGI ON A LOG



MAP 3 CIRCULATION PLAN – KUALA CHERUAI



MAP 4 KUALA CHERUAI – PLAN



MAP 5 CIRCULATION PLAN: KUALA KOH

Elephant rides

These are not meant to be the kind of elephant rides that one would have at a Zoo. They are meant to be fully interpreted and to allow visitors access to places of biological, historical or other interest or to areas of scenic beauty. It is possible to take visitors on elephant back to Gua Sarang Lebah then along the eastern edge of the Peningat outcrop to Gua Geronggang and than back to base via Kuala Tabong. Elephants may be kept on the south padang which could be partly utilized to grow some of the food needed by these animals. It must however be cautioned at this juncture that elephants do require a large quantity of food and can do quite a lot of damage in the area where they are tethered. Thus there is a limit to the number of elephants that may be kept in the Kuala Cheruai area.

ACCESS TO KUALA KOH/KUALA PERTANG

Kuala Koh and Kuala Pertang are situated in the south-east part of Kelantan. The nearest town is Gua Musang, a fast developing timber town situated about 10 km to the west of the north-west corner of the Park.

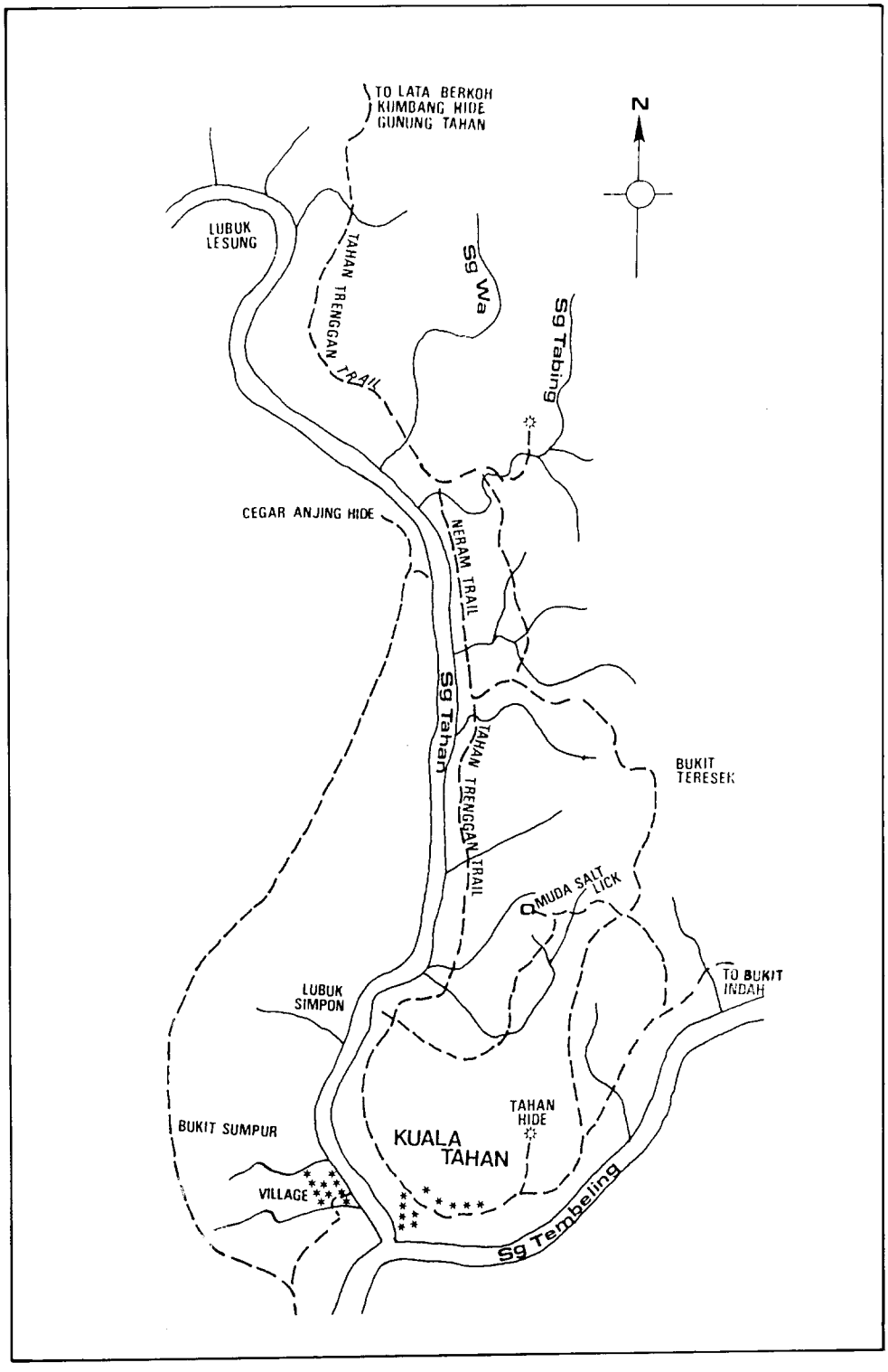
The Kota Bharu to Singapore railway line runs past the Park to the west through the town of Gua Musang and approaches the Park border to about 2 km at its nearest point. To the north, the massive opening up of Ulu Kelantan forest by KESEDAR is fast transforming south Kelantan into a vast oil palm and rubber plantation.

Road access is now up to Kuala Rentong through agricultural development schemes. The nearest major towns are Kuala Krai and Gua Musang which are accessible by rail and highway. The main jetty for the main boat journey to the headquarters will be situated at Kuala Rentong. The journey from Kuala Rentong to Kuala Koh would take about 30--40 minutes, while it will be longer if the river is low. Along this stretch, the boat will have to negotiate four rapids, namely Jeram Mali, Kelopang, Kabu and Gelugur.

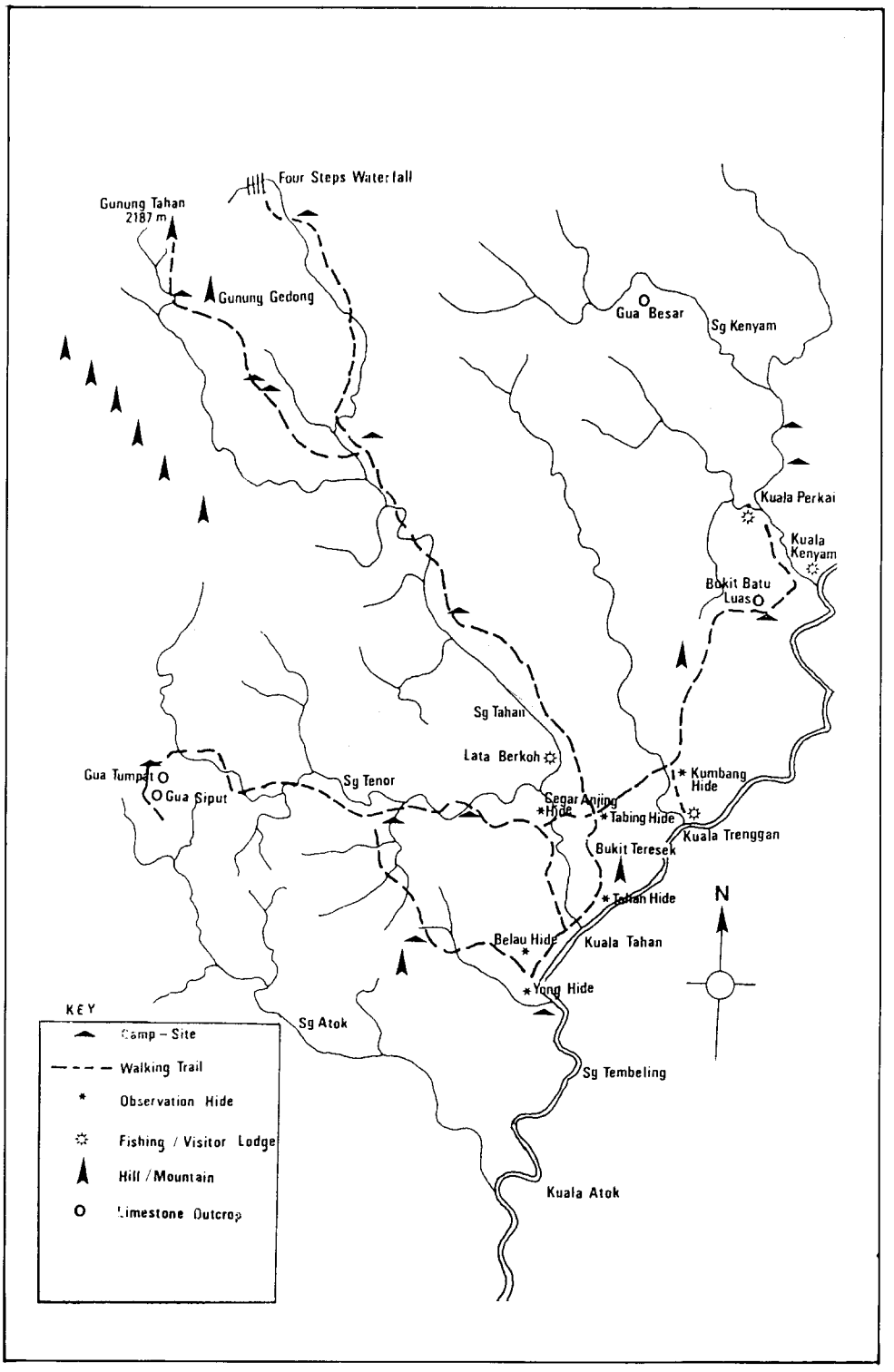
Circulation within Kuala Koh and Pertang

Kuala Koh and Kuala Pertang is to be demarcated as intensive use area. A network of trails will allow visitors to reach the hills, rivers, caves, mountains, and other unique areas. The visitor complex wili be able to offer a number of activities parallel to those of Kuala Tahan.

All internal travel from headquarters will be by boat or walking trails. The main mode of transportation within the proposed development area is by boat. A point of interest is Jeram Lura, about 5 km from Kuala Pertang which can be reached via a scenic boat ride. The Kuala Koh to Kuala Pertang



MAP 6 JUNGLE TRAILS AROUND KUALA TAHAN



MAP 7 KUALA TAHAN VISITOR FACILITIES

stretch is about 3.5 km upstream along the Lebir. A loop trail could be planned to link these two points.

Administrative building i.e. the Park headquarters and most of the staff quarters could be located at Kuala Koh, where the main entrance to the Park is located, while the chalets and other facilities for the visitors will be located approximately 2.5 km upstream the Lebir River at Kuala Pertang.

ACCESS TO KUALA TAHAN

The portion of Taman Negara accessible to visitors is that contained in the State of Pahang, bordered on the south east by the Sungai Tembeling. The Park headquarters is at Kuala Tahan, and this is generally the first point of call for visitors to the Park.

The Park headquarters at Kuala Tahan is approachable by river, up Sungai Tembeling from the Department of Wildlife and National Parks jetty situated just upstream from Kuala Tembeling. The boat journey to Kuala Tahan normally takes 3 – 4 hours, depending upon the level of the river. During dry periods (March and April) the boats have to negotiate shallow sections very slowly. A twice weekly plane service to the airstrip at Kuala Tiang, when such an operation is scheduled, would greatly overcome the problem of the shallow river. However this would of necessity be the previlege of the more affluent visitor. A jeep track from Jerantut to Kuala Tahan has recently been constructed and in time this could be upgraded to a sealed road as part of bringing road communication to the Ulu Tembeling area.

Circulation within Kuala Tahan

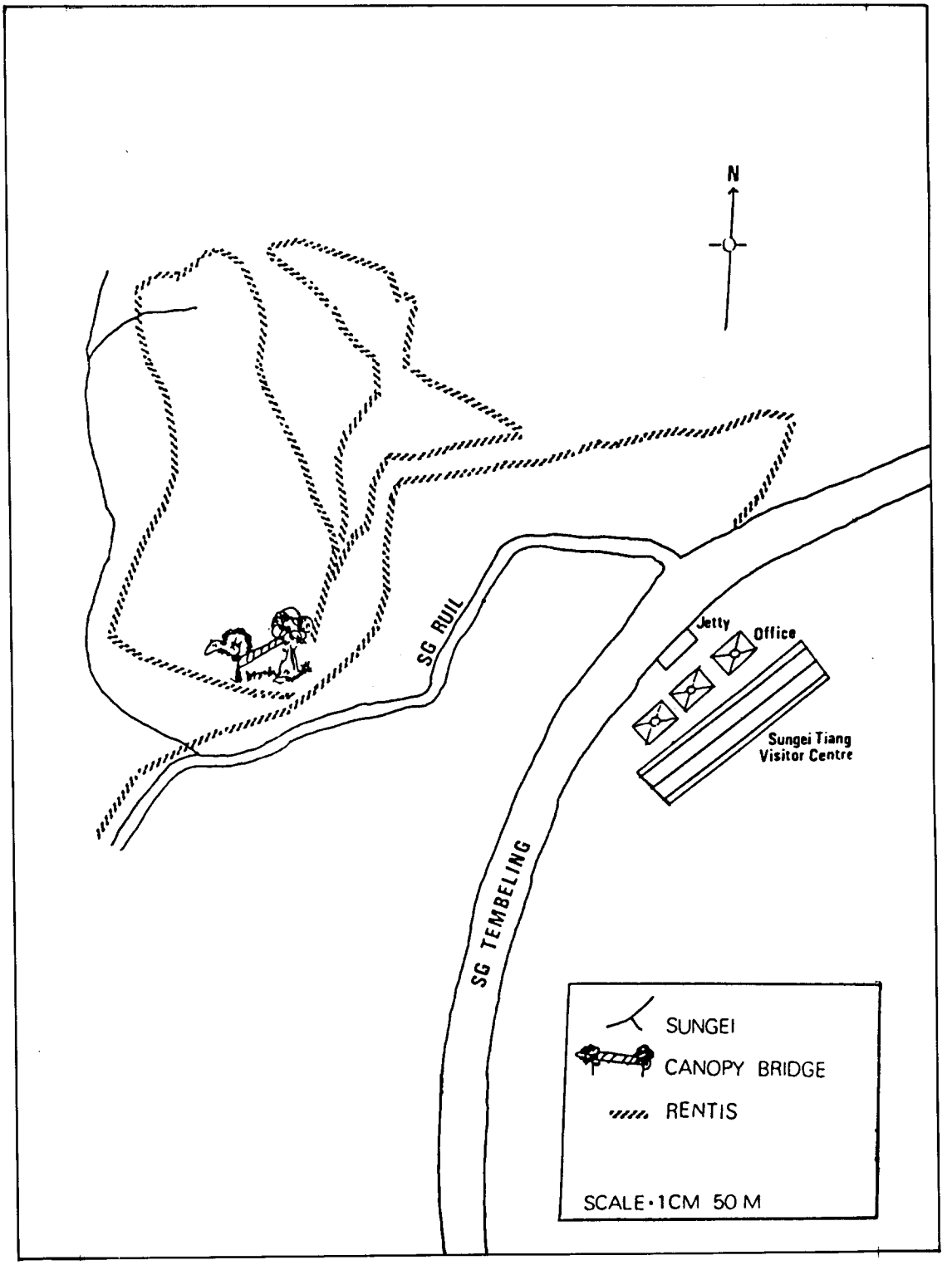
The main attractions of Taman Negara are the boat trips, game watching, hiking, fishing and swimming. For each of these activities, excellent opportunities are provided by the Park authorities. Extensive travel is possible by river and a system of walking trails. At the Park headquarters at Kuala Tahan, accomodation is available in a rest house, hostel and campsite. There are visitor lodges at Kuala Atok, Kuala Trenggan, Kuala Kenyam, Lata Berkoh and Perkai.

River trips

The Sungai Tahan and Sungai Tembeling river trips are highly recommended for visitors in the Park. However the other points of interest, such as the hides, lodges and salt licks in the Park area may also be approached more efficiently with boats.

Walking trails

An extensive and well established system of walking trails exist around Kuala Tahan. There are short trails of less than half a days duration including a climb up Bukit Teresek. There are longer trails that take a full day to complete such as the trail to Gua Telinga. There are trails that will require



MAP 8 CIRCULATION PLAN KUALA TIANG

a visitor to spend one night away from headquarters and there are trails that can keep a visitor in the forest for several nights. The most exciting challenge is the trail up to Gunung Tahan and back. In order to cater for the projected increase of visitors at Kuala Tahan more short trails will be developed in the immediate vicinity of the headquarters.

Fishing

The most successful fishing takes place in the more distant seldom fished pools away from headquarters such as Lata Berkoh or Perkai. Lata Berkoh is less than two hours by boat from the Park headquarters. The trip to Perkai takes less than half a day. In the past fishermen have even hired poling boats and proceeded slowly up river, fishing and camping on the way. However the best fishing in the Park is in the furthest tributaries up the Tembeling, that is, Sat and Sepia rivers.

Wildlife observation at the hides

Tahan hide (without overnight facilities) is just five minutes from the rest house complex. The other high hides are located at Tabing, Cegar Anjing, Belau, Yong and Kumbang. These hides are equipped with bunks (6 – 8) and have toilet facilities. All these hides can be trekked to or approached by boat followed by a short walk.

ACCESS TO KUALA TIANG

Kuala Tiang is situated at the mouth of a small stream about 8 km downstream of Kuala Tahan. While it is accessible by boat from Kuala Tembeling, its special significance is a newly completed airstrip suitable for the operation of STOL aircraft. Thus a visitor from Kuala Lumpur, Penang or even Singapore can get to this point within about one hour.

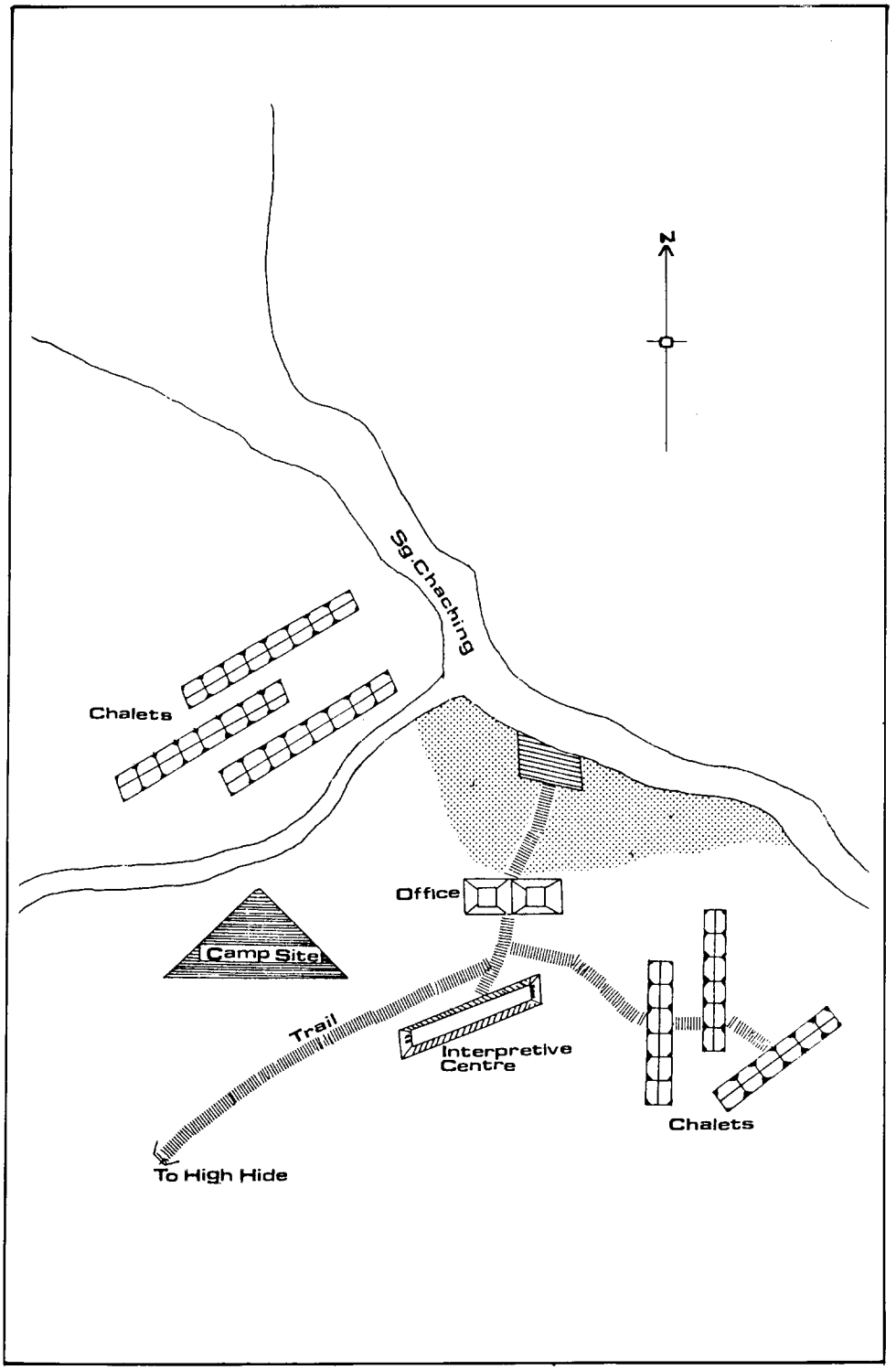
Circulation within Kuala Tiang

From a motel/hotel type center at Kuala Tiang, visitors will have a choice of walking trails in the Park area opposite and as far upstream as Kuala Tahan. Visitors will cross the Tembeling river by boat to enter the Park. One trail will be to the Sungai Ruil area where there will be facilities for boating. The other boating will be on the main Tembeling river. Across the river in the Park there will also a be walkway through the forest canopy. Visitors at this complex will also be able to go for elephant rides on a loop trail through the forest.

The Kuala Tiang visitor center can also be used as an access to Kuala Tahan. Visitors could journey upstream by boat.

ACCESS TO SUNGAI PERTANG/SUNGAI CHACHING

The discussion of this section is based upon the preliminary developments ideas for the area.



MAP 9 SUNGAI CHACHING — PLAN

From Kuala Trengganu, there is a good road that will take a potential visitor to the Kenyir damsite near Kampung Jenagor. The impounding of the Trengganu river has created the huge Kenyir Lake whose water enter several kilometers into the National Park area. Thus from the damsite the approach to the Park is by boat over the lake.

Impoundment selectively enhance certain wildlife species in the watershed as well as the aquatic system. With the flooded emergent and submerged trees in the draw down zone, the impoundment will not be conducive to water based recreation except sport fishing and boating. A study must be undertaken to devise or select a transportation system that should provide an extension of the recreational experience while affording efficient access for non-boat owning visitors to the proposed area. This study will include the evaluation and analysis of a tour boat service with its associated boat capacities, boat/craft-type schedules of operation, and cost estimates based upon anticipated visitor demands and resource capacities and limitations. All these requirements will depend upon the number of passengers to be transported and the distance to be traversed.

A future interpretive shuttle service to expose visitors to other aspects of the impoundment environment is to be considered. If such a service is combined with a tour-boat system, boat design criteria, costs and scheduling will have to be evaluated. Jetty design for both mainland and other development sites will also have to be considered.

Circulation within Sungai Pertang and Sungai Chaching

Initially, Park visitors will have to be restricted until Park infrastructure and staff are adequate. Facility construction will have to be phased to correspond with the visitor demand until the desirable carrying capacity of the area is reached. All visitor facilities will be located in the intensive use area within Sungai Chaching and Sungai Pertang.

All development projects in this area should minimize their impact on the surrounding natural landscape. Only essential structures such as the office building interpretive center, staff quarters, visitor lodges and hides should be constructed. This should blend with the natural surrounding forest environment. Wherever possible building designs should reflect the local architecture with the use of local wood materials. An absolute minimum of forest clearing should be carried out at the visitor center and should in no case involve pristined areas.

PUBLIC CONTACT, INFORMATION AND FEES

Contact with the public has three phases. First is the advertising phase when a potential visitor is made aware of Taman Negara and the recreational opportunities it offers. This is entirely the responsibility of the Tourist Development Corporation (TDC) who advertise the Park within this country and internationally. They also provide information on how to make bookings and on the charges and fees levied. In addition to the TDC's offices, advertisements (in newspapers, magazines, exhibits, brochures and other advertising techniques) information on Taman Negara is also available from travel agents, and the DWNP offices.

The second phase is when a visitor, having obtained all the preliminary information necessary, takes steps to make a booking to visit the Park. Before privatisation this was done with the DWNP Park Booking Office. On privatisation this responsibility may be given to the private contractor, except that the entry permit will still be issued by the DWNP as this is a legal obligation.

The third phase of contact is when the visitor arrives at the visitor center. To date this has been Kuala Tahan. In time with further development of other visitor centers, Kuala Tiang, Kuala Koh, Kuala Cheruai, and Kuala Chaching may be added to this list. Here the visitor is met by Officers of the Park, including its interpretive section, and a detailed schedule of activities during his stay worked out. With privatisation this phase of contact will also involve the private contractor with respect to facilities catered for by the latter.

DEVELOPMENT AND PARK MANAGEMENT STRATEGIES

The development and management strategy is to optimize the recreation experience at a carrying capacity that still preserves the environemnt. If this strategy cannot be achieved at a visitor centre, alternative visitor facilities should be developed at other areas.

The strategies are listed below.

1. Recreation development and recreational use in the Park has to be monitored and controlled strictly to protect the environment and maintain the wilderness atmosphere.

2. Law enforcement must remain a primary tool of management. To produce sustained recreational use, involves protection and regulation, that is law enforcement. Without adequate law enforcement, the finest research and management programs would have little meaning. However, the Park's rules and regulations should only be at a minimum so as to achieve the important recreation objectives of freedom. The themes of freedom, spontaneity and escape have emerged as important components of the wilderness experience. To preserve the unique qualities of wilderness, specific restrictions are sometimes required, but then regulations can significantly alter the experience of users. It is best therefore that law and regulation be light-handed way, subtle and indirect rather than direct and authoritarian. This is a principle of instituting minimum regulations that are just sufficient to achieve enforcement objectives.

3. In managing use, wilderness-dependent activities should be favored. Wilderness serves as a setting for many activities ranging from scientific research to recreational pursuits. If there is conflict with other recreational activities, then the wilderness recreation activity must be favored. This is to ensure optimum use of wilderness resources.

4. Recreational resource areas should be zoned according to use so that the various types of use are spatially distributed.

5. More research should be conducted on recreation management problems to prepare for future management and restoration programs. It must be anticipated that there are bound to be more problems with user conflicts and carrying capacity in the future if population and levels of participation continue to increase.

6. Park facilities should be planned on perimeter lands as contrasted with heartlands, building of day-use facilities rather than overnight facilities, building facilities that minimize environmental damage, and

developing with simplicity, utility, quality, and appropriateness in mind.

7. Open lines of communication with all segments of government agencies and public to ensure recognition. It is in the national interest to provide necessary support to National Park Operation.

8. Increase the accessibility of Taman Negara to all people.

9. Improve the quality of public use through assistance, educational and effective interpretive program. One of the most important responsibility of Taman Negara Park service is Park interpretation.

10. As Taman Negara is a "people serving" organization, personnel management is very important. A comprehensive training program involving skills in interpretation, attitude and Park philosophies for Park staff is essential.

11. Conduct wildlife research. Priority must be given to endangered species.

12. Wildlife and habitat management should give priority to endangered species and to attracting wildlife species to frequent "developed" or high density use areas.

LAND CLASSIFICATION AND ZONING

In providing proper recognition and protection for Park resources, the entire area of Taman Negara has to be separated into land use classification and management zones for proper planning and resource management. This is to insure that the development of public use facilities is compatible with the preservation of the Park natural resources.

The approach used is to classify the various areas according to the nature of the area and the potential or actual use. The entire area is then zoned based upon these classifications. The classes are not mutually exclusive. As our knowledge of the Park and its flora, fauna and other features increases, changes may be made to both the classes and zones in the Park.

LAND CLASSIFICATION

This area classification is for use identification based upon Outdoor Recreation Resources Review Commission prescribed by the Bureau of Outdoor Recreation and adopted by the National Park Service of the United States of America.

The classification are as follows:

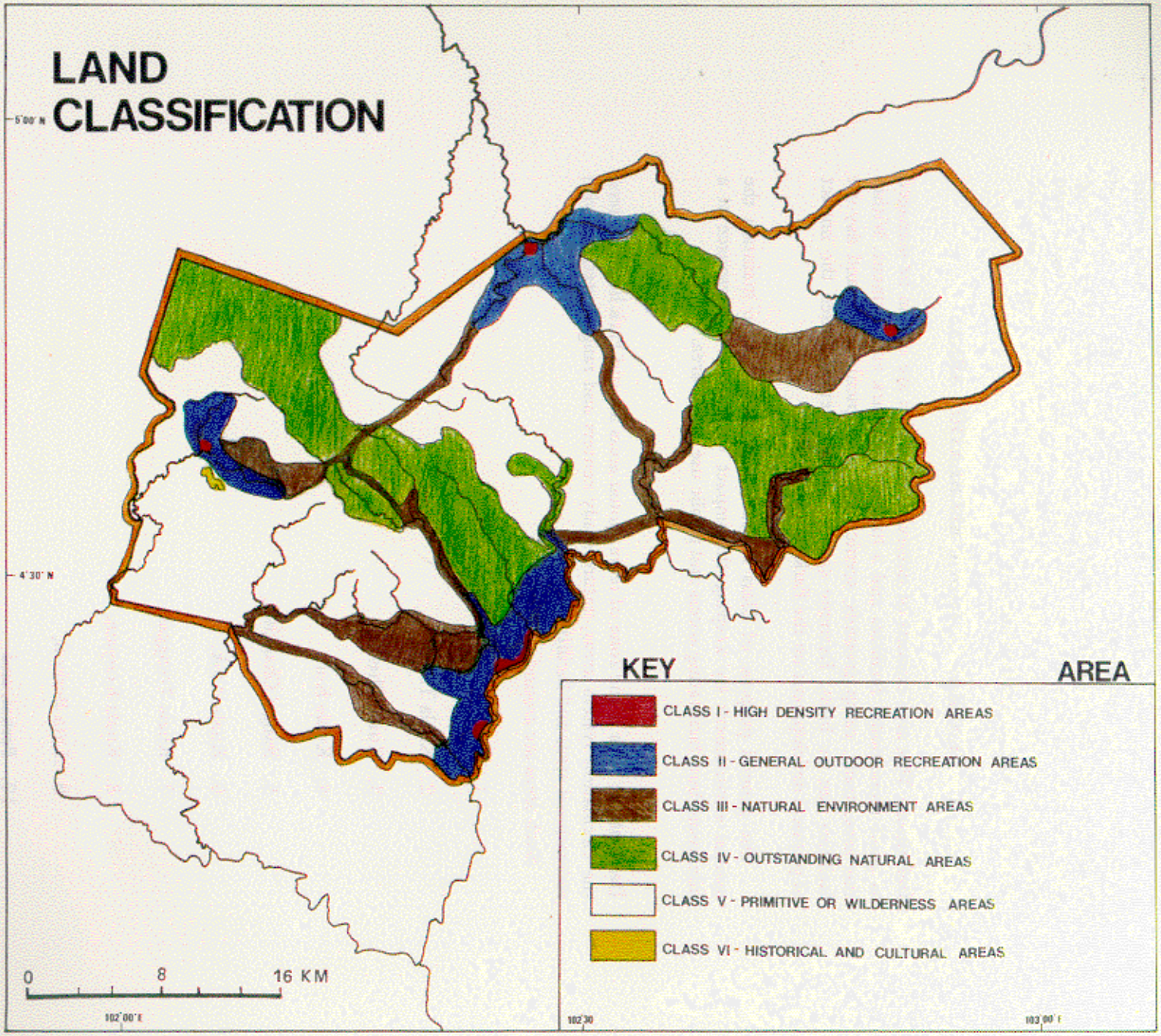
Class I – HIGH DENSITY RECREATION AREAS

Definition: This is the area of high visitor density which needs the most management. It consists of land reserved for Park headquarters and visitor service areas which includes visitor accomodation, administrative facilities, camp grounds, interpretive and education centers, and nature trails. It contains outstanding scenery and resources that are suitable for relatively dense recreational activities.

The general management purpose is to facilitate development of intensive recreation in harmony with the surrounding habitat and causing the least possible impact on the environment.

Description: The areas identified at this stage are:

1. Kuala Tiang,
2. Kuala Tahan,
3. Kuala Cheruai,
4. Kuala Koh, and
5. Sungai Chanchin.



MAP 10 LAND CLASSIFICATION

Kuala Tahan, the existing Park headquarters, is the major visitor center of the Park. There are already plans to develop new major visitor centers at Kuala Cheruai (Pahang), Kuala Koh (Kelantan) and Sungai Pertang (Trengganu). Kuala Tiang is the site of a new airstrip catering for flights into Taman Negara, where it is planned to have a visitor service center, accomodation and recreational facilities.

Class II – GENERAL OUTDOOR RECREATION AREAS

Definition: This area consists of natural areas which are or can be managed as good recreational facilities and a high quality Park environment. Within this area, trails, camp grounds, scenic overlooks, picnic areas, and day-use facilities can be built. Extreme care must be taken to lessen the impact of physical development on the Parks natural values.

The general purpose of Class II areas management is to maintain the natural environment by keeping the impact of use on the resource at a minimum, but, facilitating access and public use of the area.

Description: This is the zone of recreational areas around Park headquarters, the circulation system areas, nature study centers and rangers stations with recreational areas and facilities.

Such areas are around:

1. Kuala Tahan,
2. Kuala Tiang,
3. Kuala Cheruai,
4. Kuala Koh,
5. Sungai Chanchin,
6. Kuala Atok,
7. Kuala Trenggan,
8. Kuala Kenyam,
9. Lata Berkoh,
10. Perkai, and
11. Sungai Pertang.

Class III – NATURAL ENVIRONMENT AREAS

Definition: Natural Environment Areas are usually more remotely located than the high-density areas, and have varied land forms, lakes, streams and rivers, flora and fauna. This is the land that provide a setting, or atmosphere for the natural features of the area. These features are important for the proper preservation, interpretation and management of the area. These areas also serve to accomodate appropriate visitor use of less intensity than those on Class I and Class II lands. Only limited facilities maybe provided on these lands such as trails, camp grounds and look-out points.

The general management objectives of this class are to preserve the natural environment, carry out scientific studies, environmental education and wilderness recreation in a primitive form.

Description: This Class III areas are remote:

1. Trails – a) Sungai Melantai to Gunung Tahan and Four-steps waterfall,
   b) Sungai Koh to Gunung Tahan,
   c) Sungai Tanum to Gunung Tahan,
   d) Mat Kilau trail,
   e) Dato Bahaman trail,
   f) Leonard trails – i) Kuala Atok to Batu Lompat
      ii) Sungai Yong to Batu Lompat,
   g) Tenor trail, and
   h) Sungai Chanchin to Gunung Gagau.

2. Caves – a) Gua Siput,
   b) Gua Tumpat, and

3. Upper reaches of Sungai Tahan, Sungai Lebir, Sungai Chanchin, Sungai Cheruai, Sungai Tanum, Sungai Kenyam, Sungai Sat, Sungai Koh, Sungai Spia and Sungai Tabong.

Class IV – OUTSTANDING NATURAL AREAS

Definition: This area has outstanding natural features that merit management and preservation. Unique natural areas are:

1. those of pristine nature which serve as prime examples of ecosystem or geological formation,

2. those of species value for educational or scientific purposes, and

3. those used for natural appreciation by the casual observer, particularly areas of great natural beauty.

Management by public use control is the key factor in these areas. Public use of the area should be denied and limited use permitted for scientific, management and educational purposes only.

Description: The areas are:

1. the entire Trenggan valley except the Class II area near to the Tembeling river which includes the trail from Kuala Tahan to Kuala Kenyam,

2. the watersheds of the Ulu Teku and Ulu Tahan. On the Sungai Teku, the area begins ½ km above Kuala Teku while on the Sungai Tahan, the boundary is at the look-out of the Four-steps waterfall,

3. all of the Tahan massive above 1,400 m except for the trails used by climbers and their normal designated campsites,

4. the Rabong massive and the entire watershed of the Relai,

5. the valley of the Kenyam above the point of visitor use (Perkai fishing lodge). The area also include Batu Besar near Sungai Kenyam Kecil,

6. the upper watershed of the Pertang in Kelantan, and

7. the watershed of the Sungai Spia and Sungai Jintoh except for the area of visitors use.

Class V – PRIMITIVE OR WILDERNESS AREAS

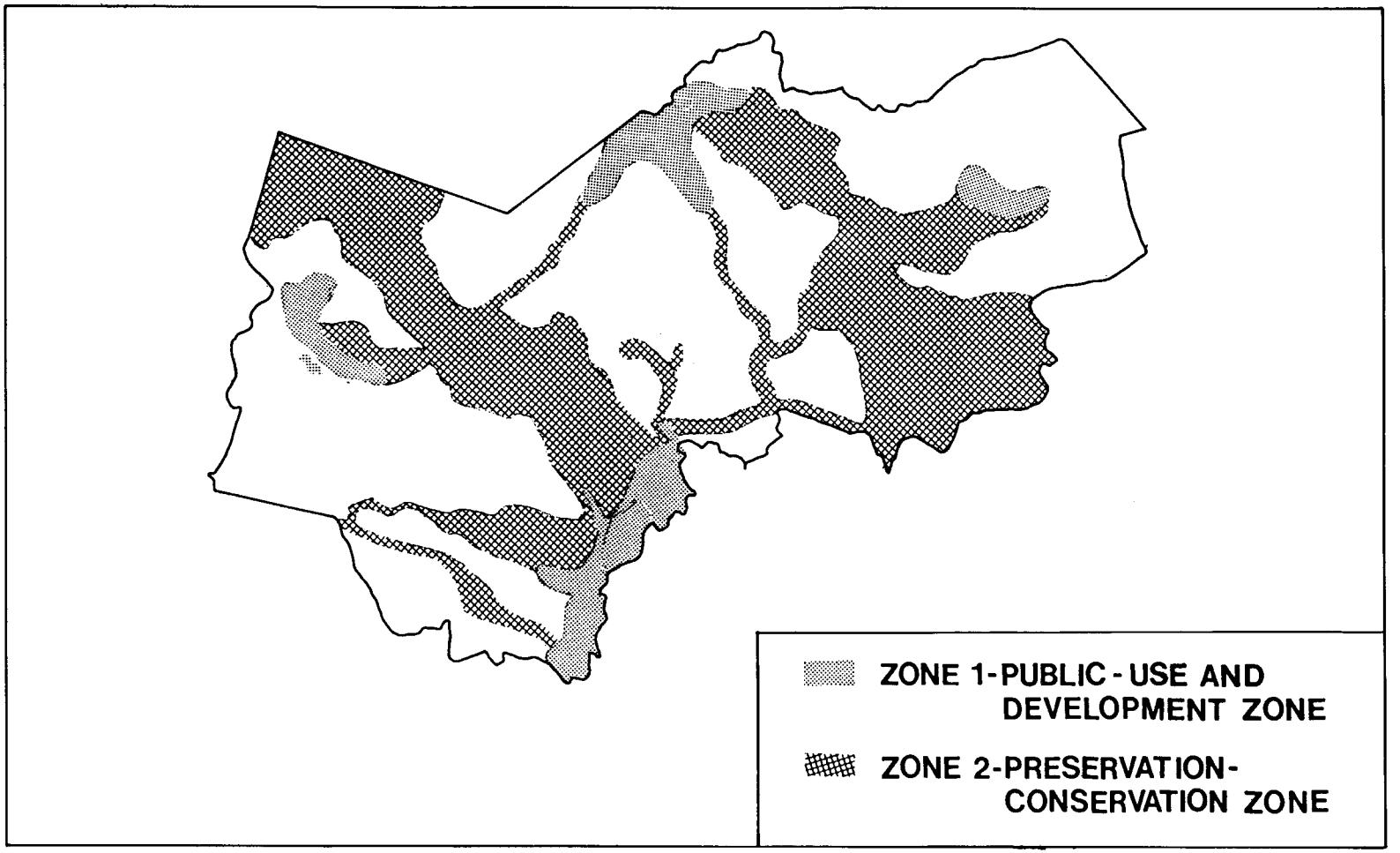
Definition: These are primitive lands that have remained pristine and undisturbed as a part of the national inheritance. They are generally not open to visitor use and recreation. Scientific research may be allowed in these areas. This wilderness area, if opened to the public, will be on a restricted basis and provided with trails and limited primitive campsites.

Description: The areas are:

1. Kechau,.

2. Tenor,

3. Kemuai,



MAP 11 ZONING

4. Aring,
5. Koh,
6. Kenyam,
7. Badong,
8. Bukit Milong,
9. Gunung Padang,
10. Tanum,
11. Atok,
12. Sat,
13. Petang,
14. Gunung Mandi Angin, and
15. Lebir.

Class IV – HISTORICAL AND CULTURAL AREAS

Definition: This is land on which is located the historical resources (structures, sites or object). Physical development will be limited to those essential to preservation, restoration or to convey the historical value of the area to the public.

Description: The area in the Park is Gua Peningat which is located on the western part of Taman Negara. It contains a cave with obvious signs of use by stone-age man. This cave should be closed to the public until the power archaelogical authority has investigated the area and tabulated its artifacts and removed any valuable item remaining in the cave.

AREA ZONING

Zoning for management is made after the parkland has been properly classified. The prescribed zones for Taman Negara are as follows:

1. PUBLIC USE AND DEVELOPMENT ZONE

This zone include the lands needed for administrative facilities, staff quarters, public-use facilities of high and moderate intensities (Class I and II areas). This zone also includes the land of historical significance (Class VI).

2. PRESERVATION – CONSERVATION ZONE

This zone include those lands necessary for the preservation-conservation of the environment of the area. Class II and IV fall in this zone. Scientific research and management, which is consistent with the purpose of the area, may only be carried out by the Department of Wildlife and National Parks and other scientific institutions.

RECREATIONAL FACILITIES PLAN

Within and subject to the overall principles of the National Park, the recreational facilities that are provided to visitors fulfill the following functions:-

1. serve the visitor's needs,

2. protect the Park from visitor impact,

3. meet the needs of management and maintenance of the Park, and

4. create a good Park image.

The facilities that are provided in the Park may be divided into buildings, picnic sites, swimming areas, trails, wildlife observation points, camping sites, interpretive centers, water and energy supply, and waste disposal systems.

Buildings

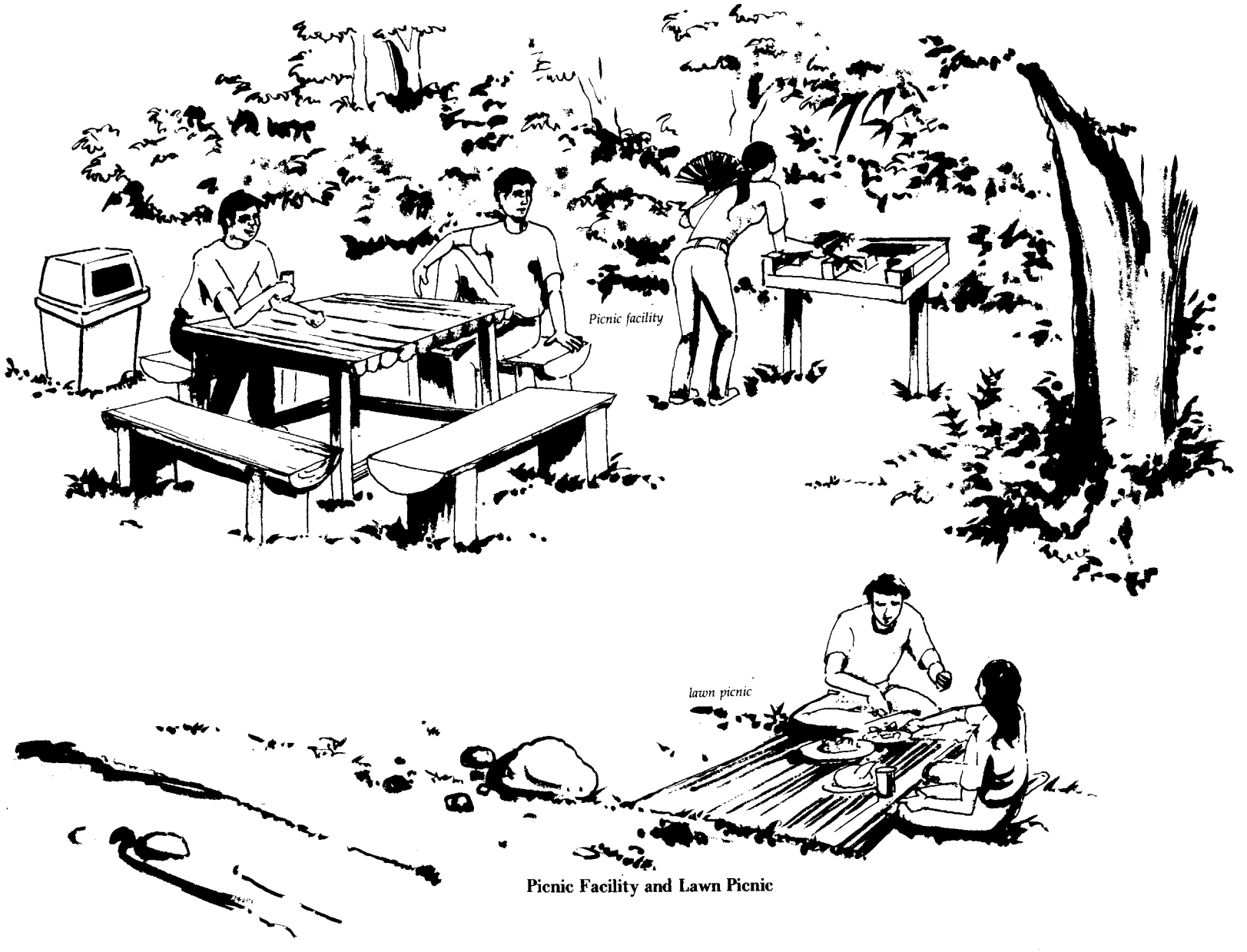
All buildings in each visitor center of the Park must be identified and listed. Very often planners of park facilities are so taken up with basic vistor facilities that the accomodation for staff is overlooked in any listing. In fact, staff accomodation are likely to occupy a greater area than those required by visitors at any Park headquarters. This list of buildings should include not only the visitor accomodation but also all ancilliary buildings such as shops, booths, and toilets.

Picnic sites

Picnic sites are areas that are scenic, reasonably close to the main visitor center and usually associated with some other day-use type facility such as a swimming pool or boating. One important factor that must be kept in mind is that picnic sites should be sufficient in number so that picnickers may feel uncrowded and in a remote area.

Swimming pools

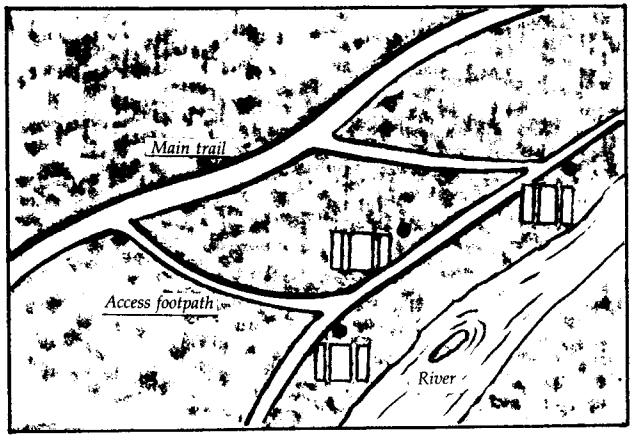
The swimming pools that are selected should be safe, accessible, and in scenic surroundings. The three pools on the Tahan at Lubok Simpon, Lubok Lesong and Lata Berkoh are excellent examples of well chosen swimming areas. A kind of carrying capacity for each such pool should be worked out and some regulation on use be instituted. As the condition of the pools can vary from day to day depending upon rainfall, these conditions should be posted on a bulletin board at the main visitor centers.



Picnic Facility and Lawn Picnic

Amphi theater

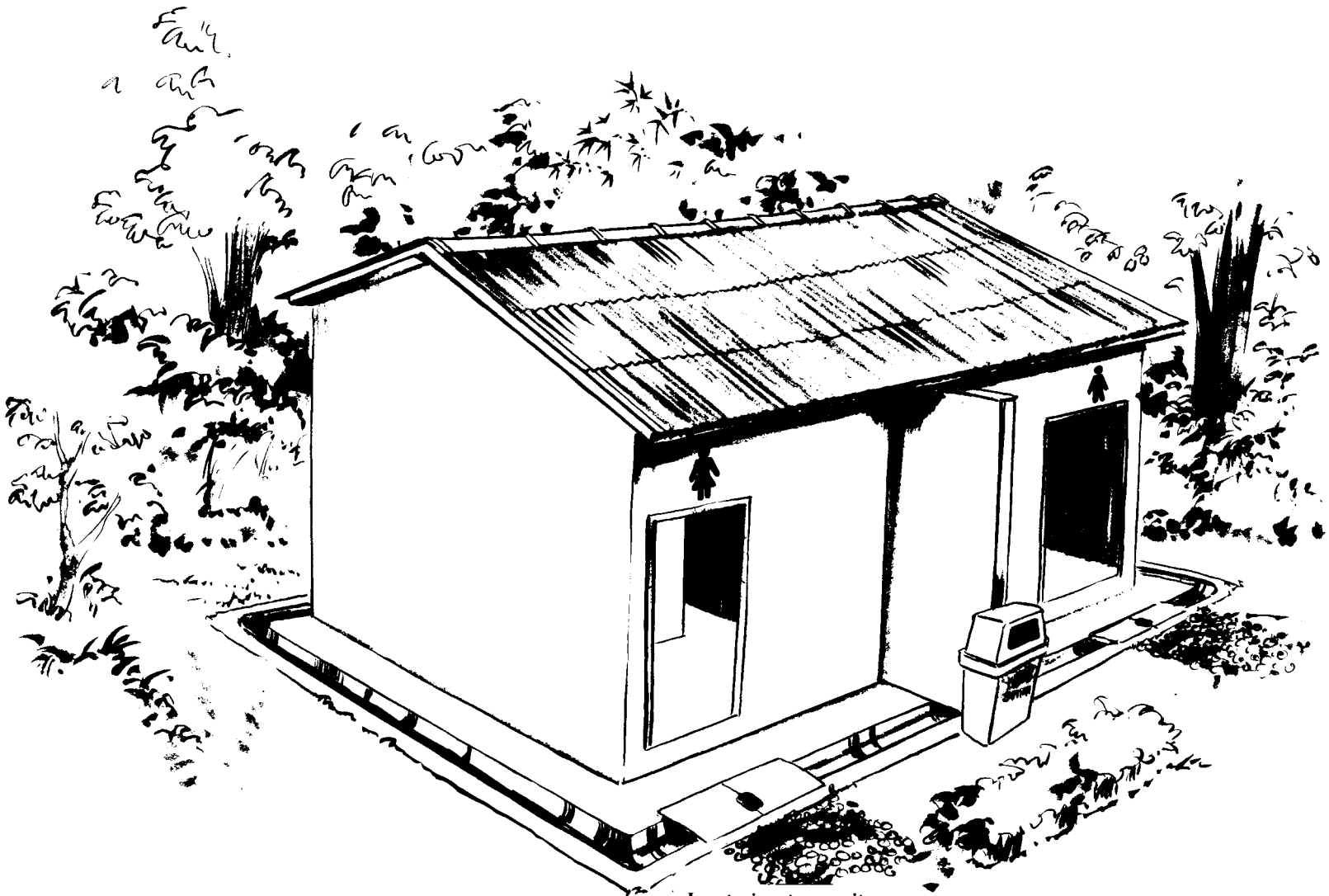
Campfire circle



Picnic Table

Trash can

Cluster picnic ground



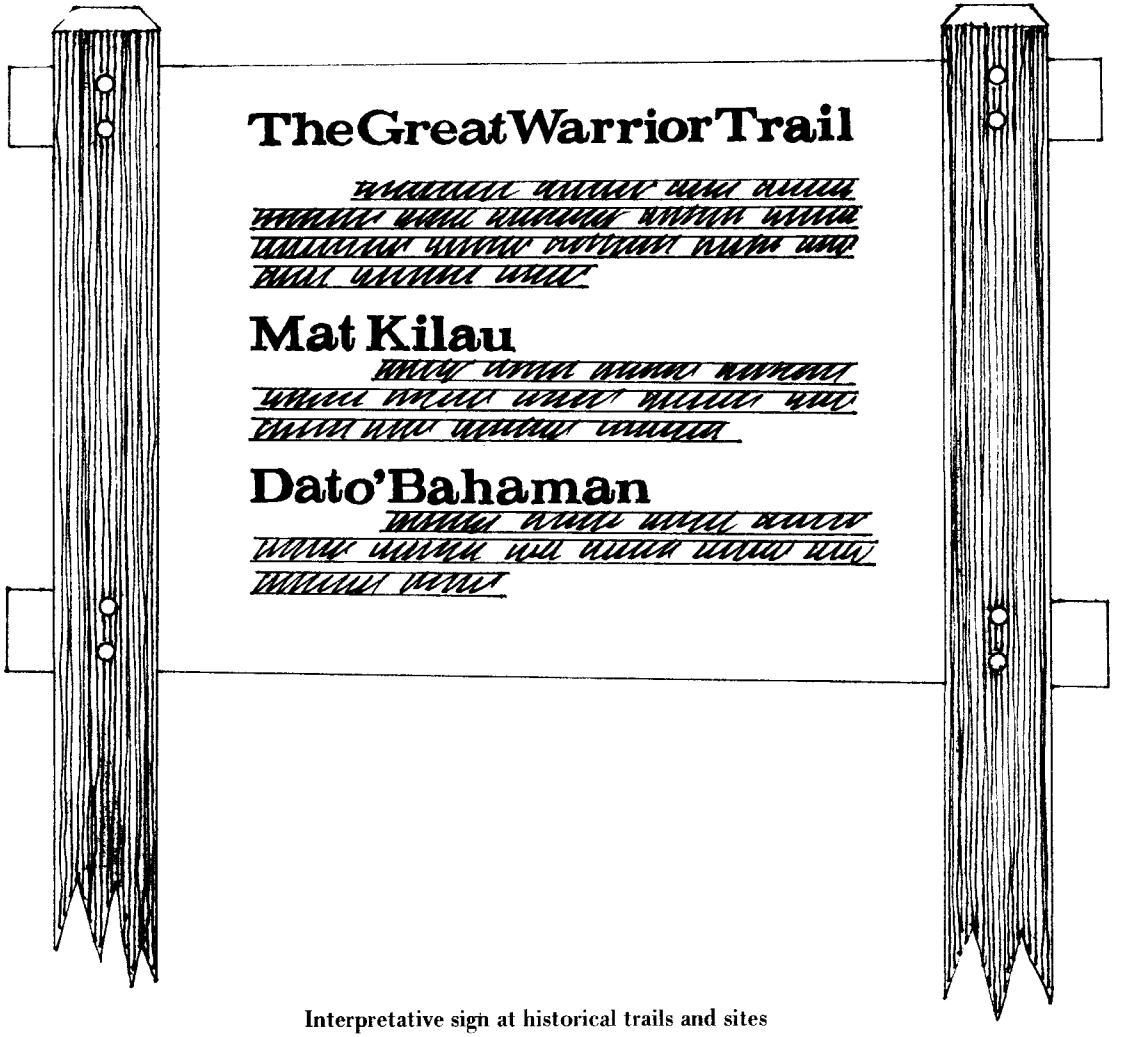
Lavatories at campsite

'Tubing' along the river

White water rafting from Kuala Terengganu to Kuala Tahan

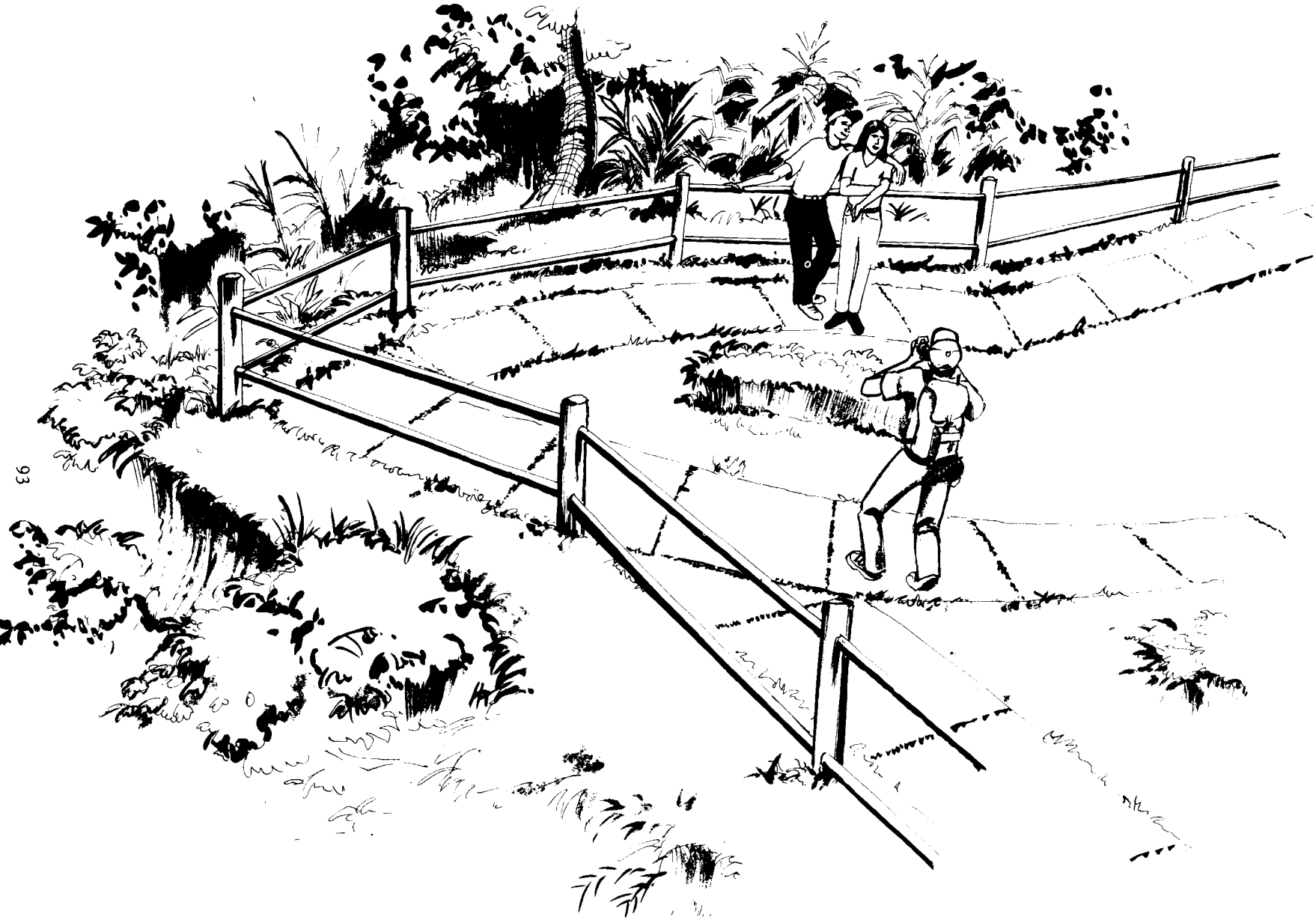
SELF-GUIDED INTERPRETIVE TRAIL

INTERPRETIVE KIOSK ON NATURE TRAIL



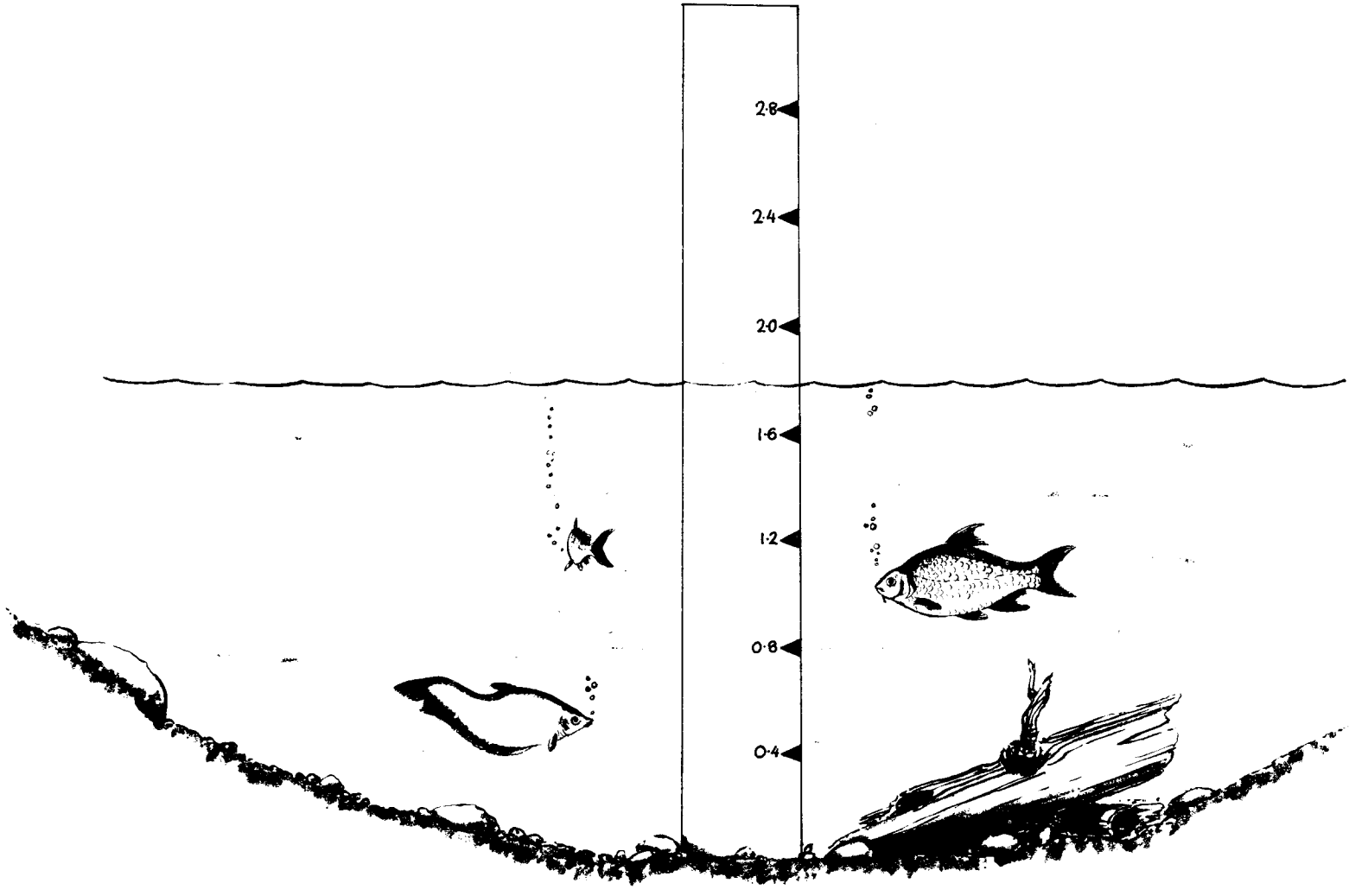
Interpretative sign at historical trails and sites

Self-guided trail

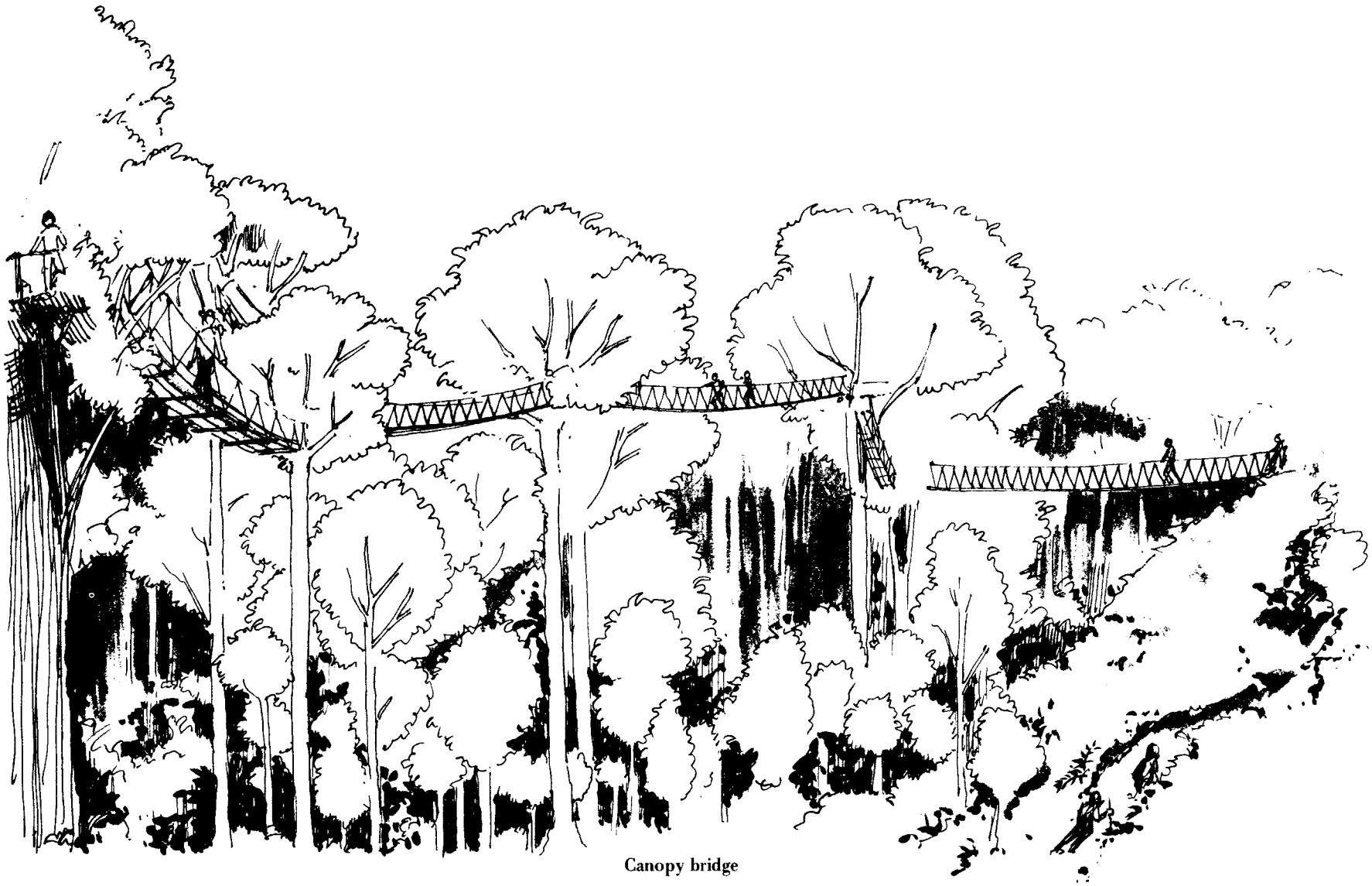


Split-rail fence and trail to channel pedestrian traffic through a high use picnic area

Footbridge over a small stream

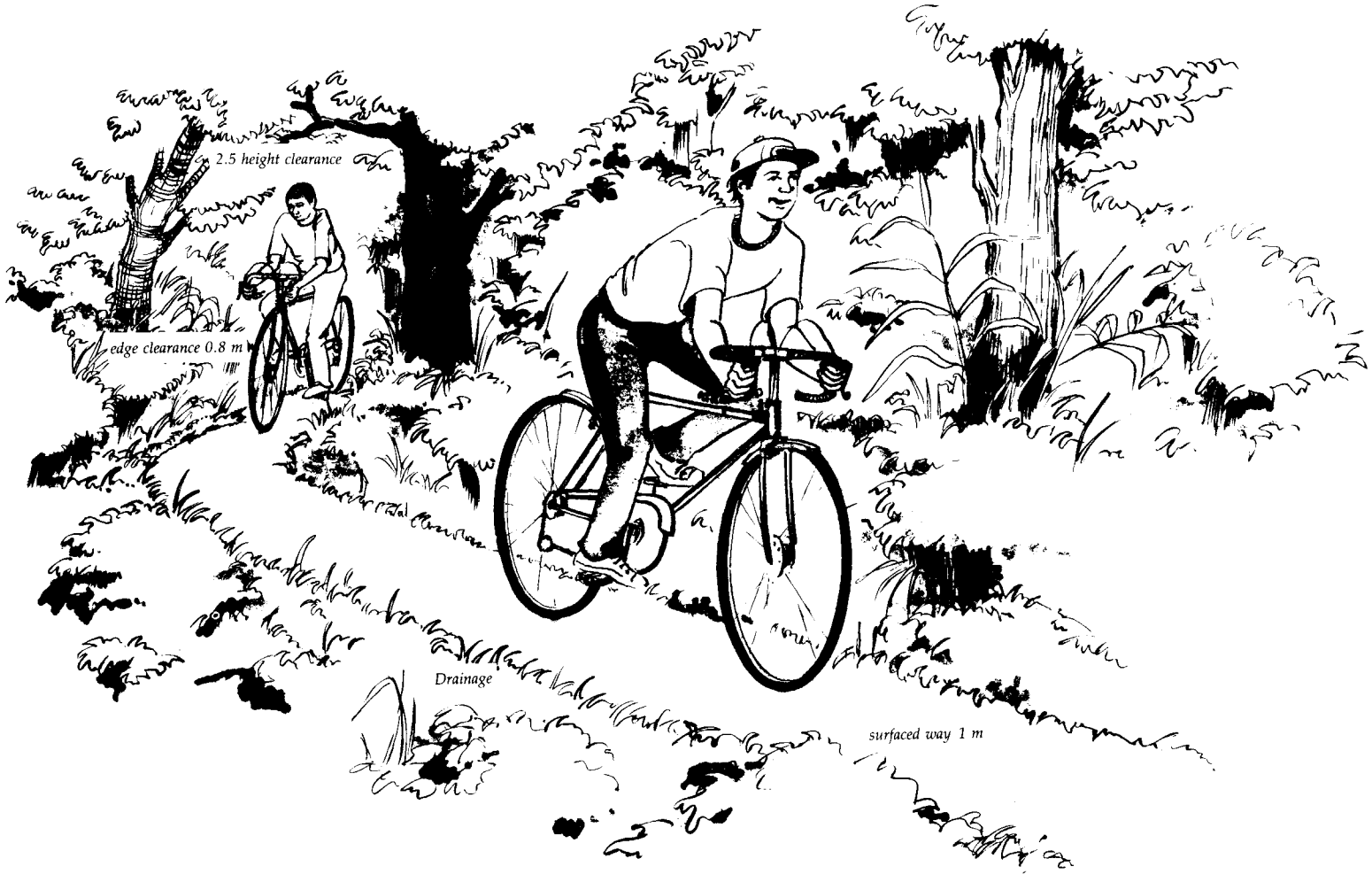


Self-reading depth rods in areas with fluctuatiny water depth

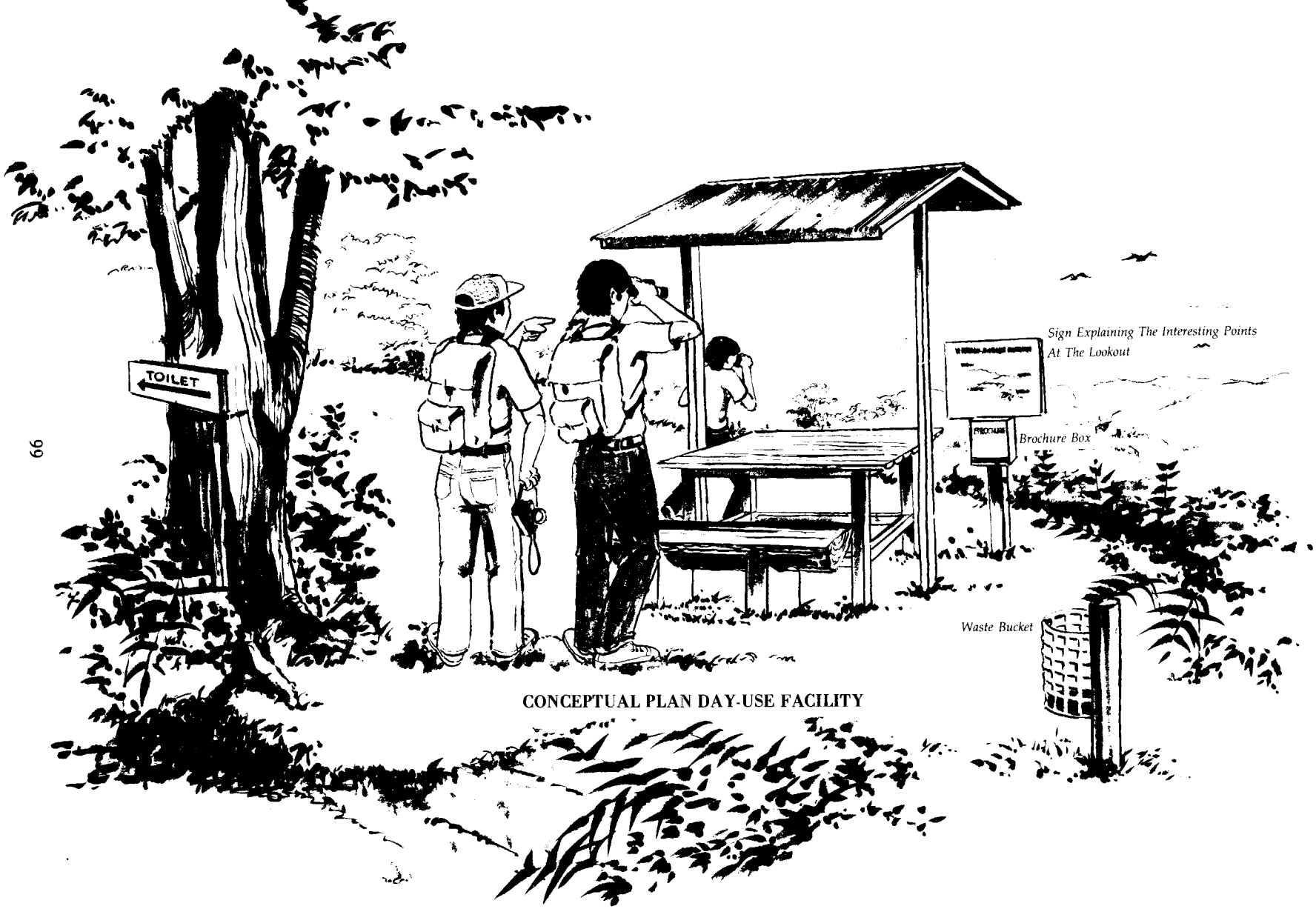


Canopy bridge

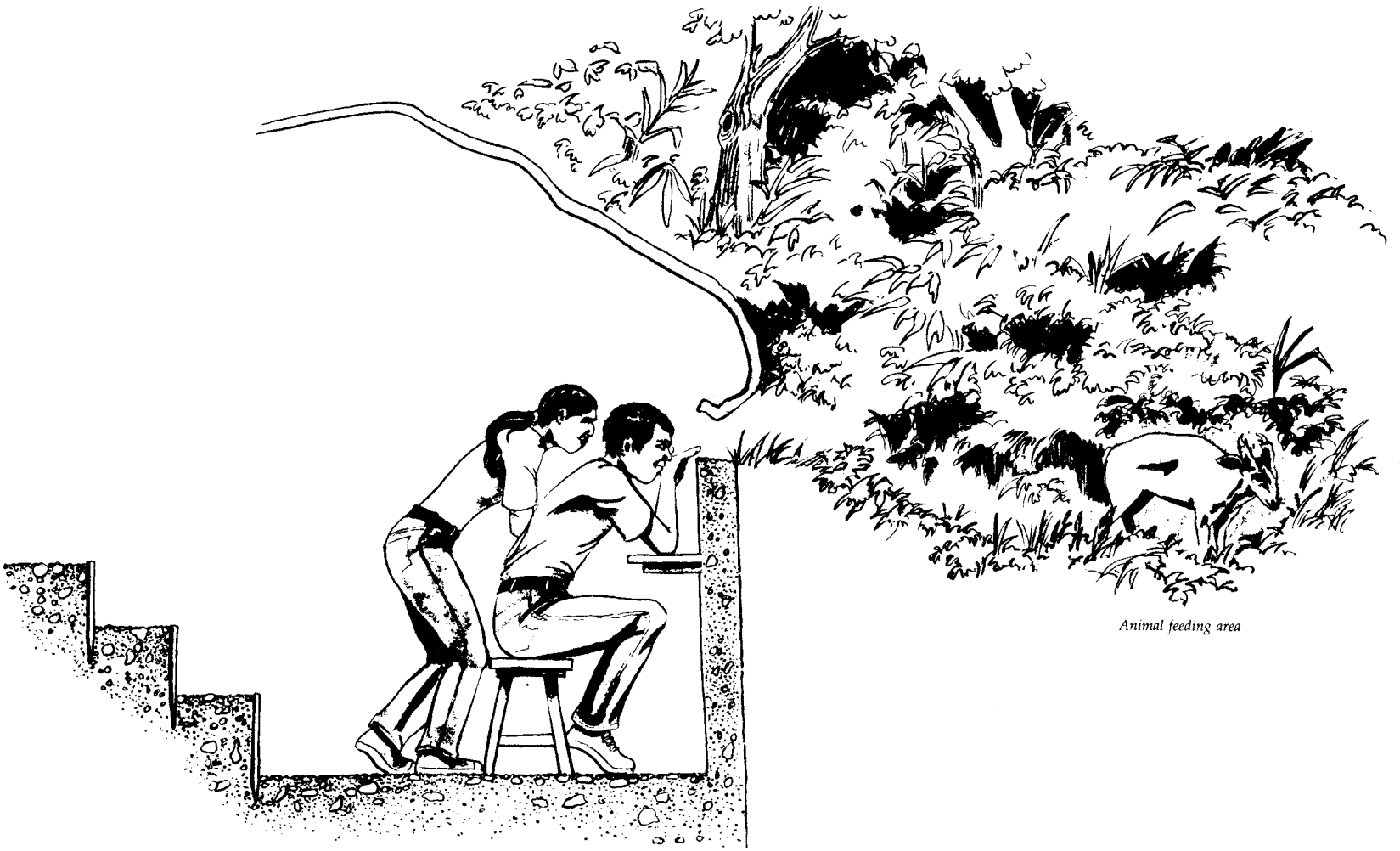
Elephant trail



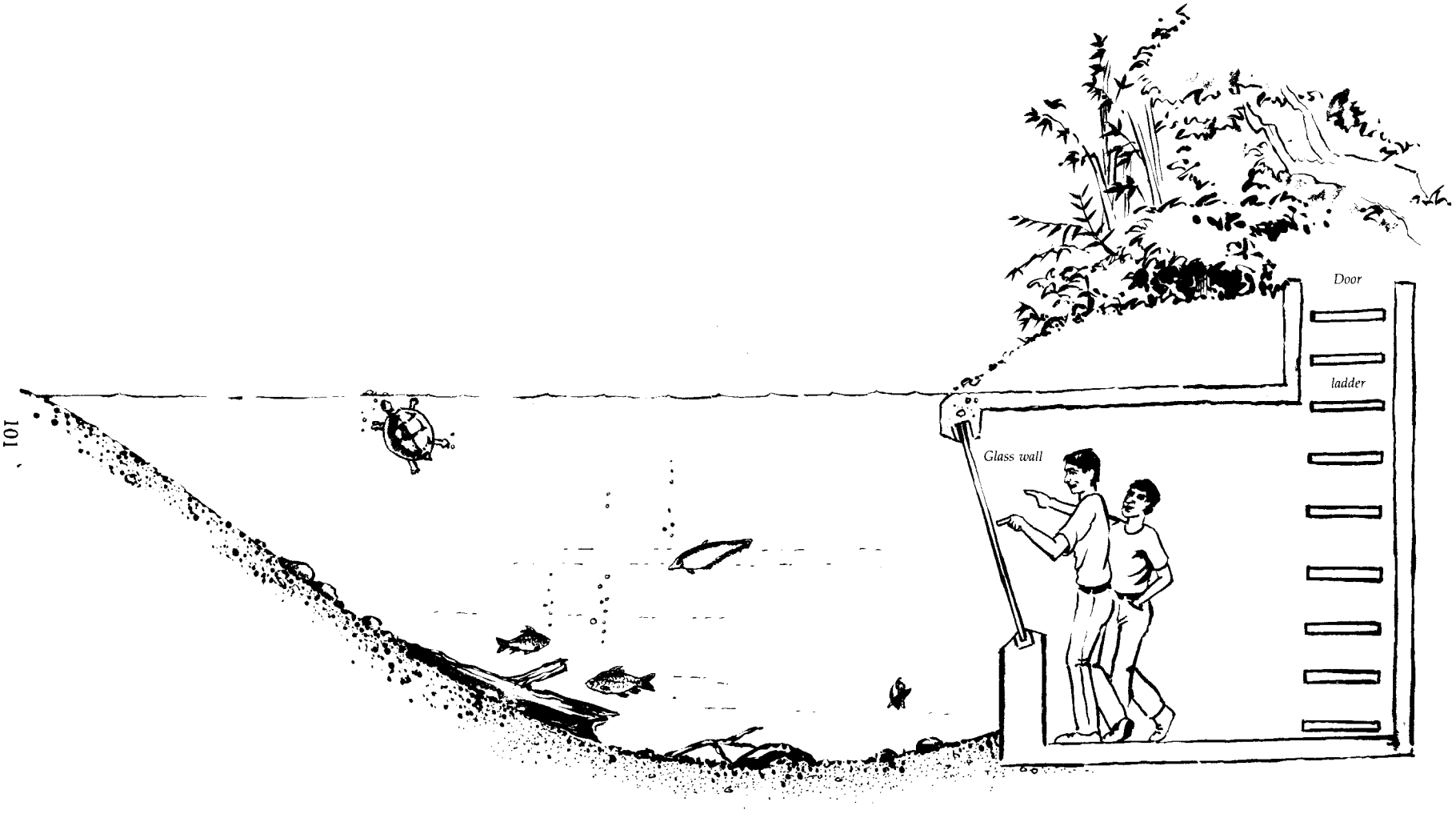
Bicycle trail



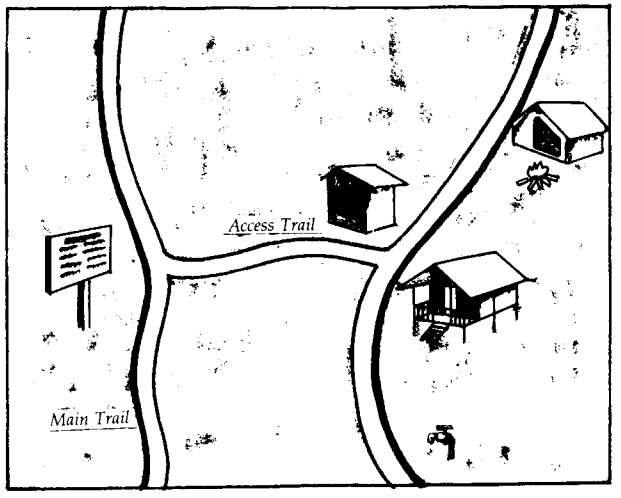
CONCEPTUAL PLAN DAY-USE FACILITY



Subsurface observation hide



SUBMERGED OBSERVATION TUNNEL



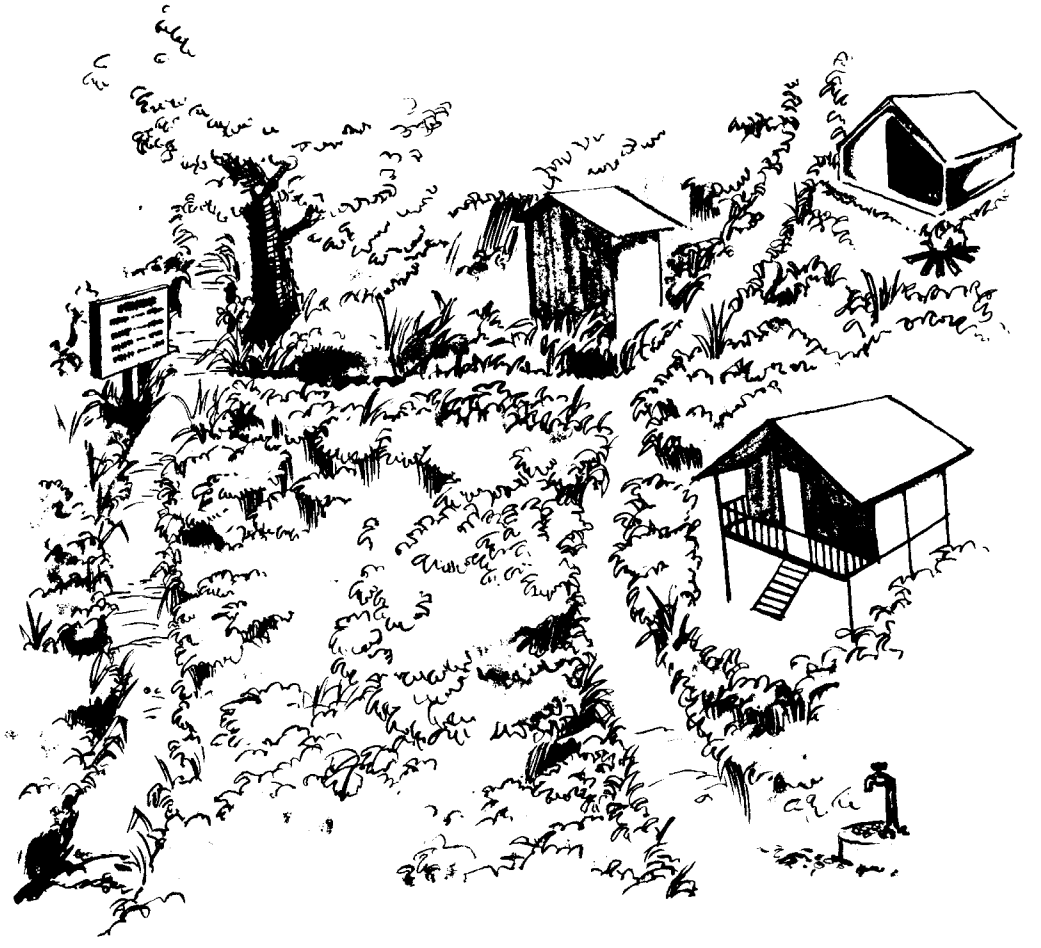
Sign

Toilet

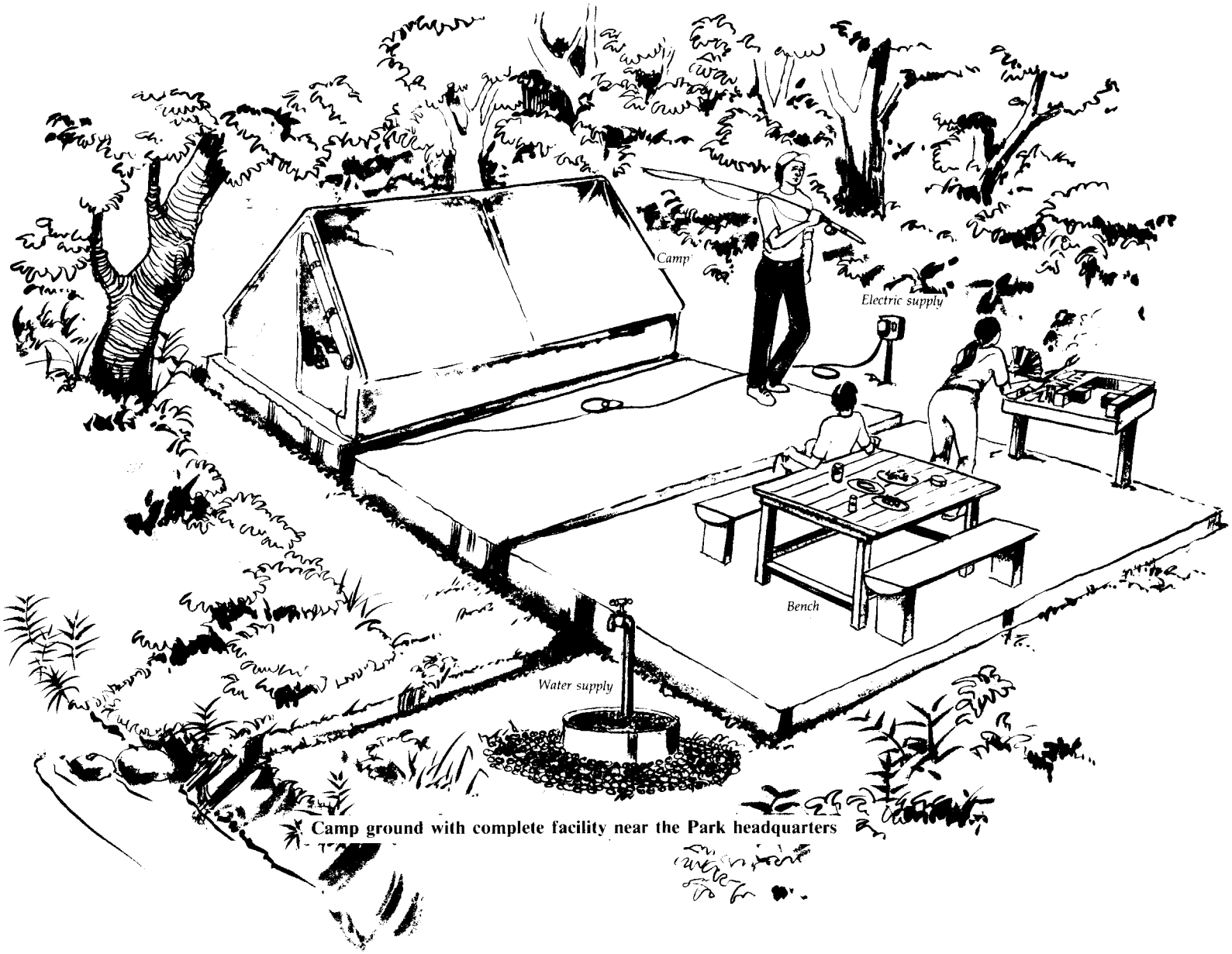
Camp site

Main shelter

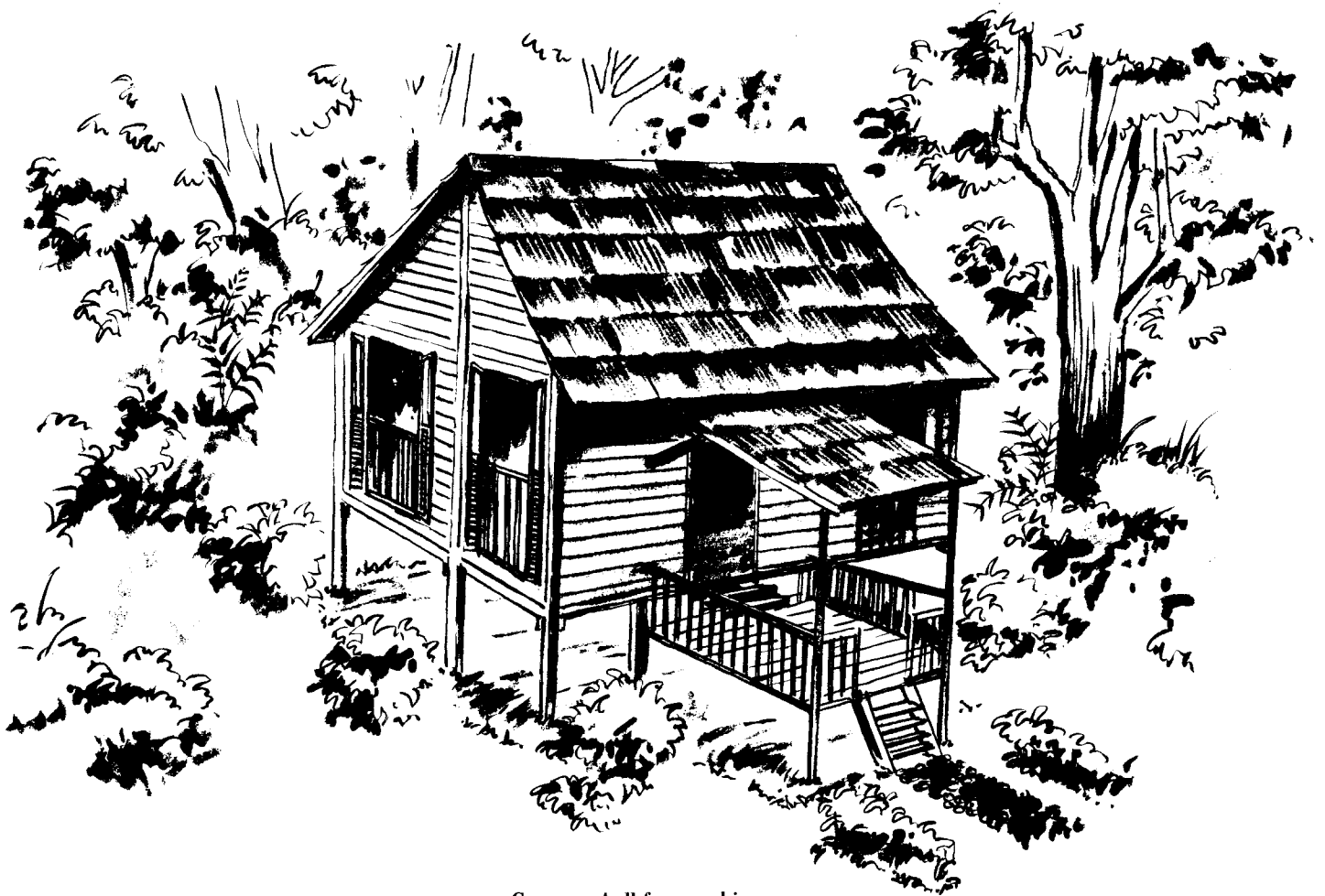
Water source



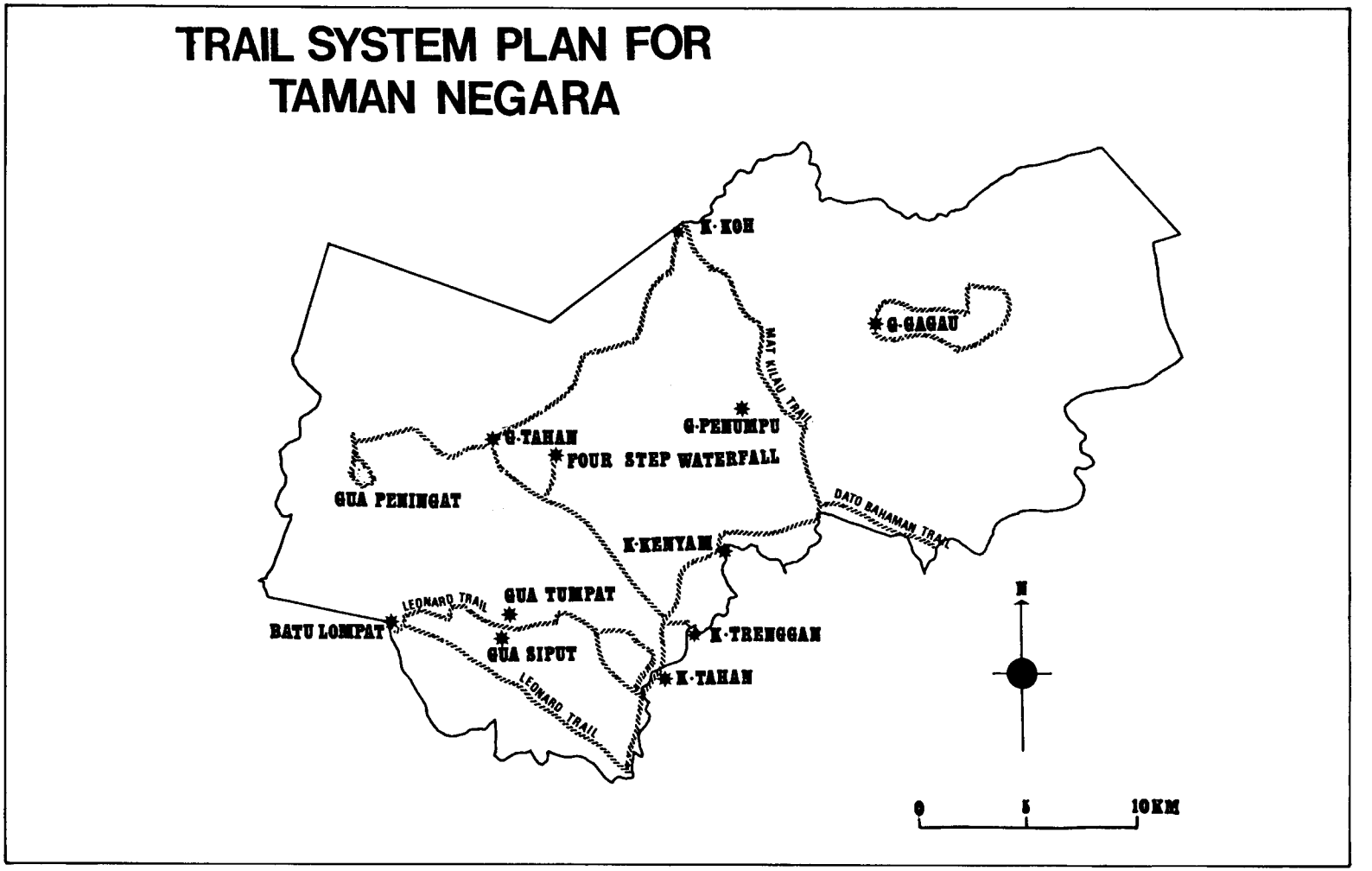
Layout of a back-country camping area



Camp ground with complete facility near the Park headquarters



Common hall for worship



MAP 12 TRAIL SYSTEM PLAN FOR TAMAN NEGARA

Boating and water-related recreation

In keeping with the principle that all major visitor centers be located on the periphery of the Park, all new centers should be located on the banks of rivers. Thus boating and water-related recreation naturally become an important part of the recreational milieu.

Kuala Tahan has already achieved a measure of fame because of the skill of its boatmen especially in "shooting the rapids" of the Tembeling Gorge. This kind of boating should continue to be made available to visitors. There should also be made available self-paddled canoes to be used on stretches of river that have been vetted from the safety point of view. White-water rafting in dinghies and tubes may also be made available under conditions where safety precautions and procedures have been adopted.

Trails

Trails are of a number of types which allow the visitor to move through the forest and either visit some point of interest or simply take in what the trail has to offer. Walking trails are short and covered in less than a day. The most interesting form of this trail is called a self-guiding trail, where with a map and simple notes a visitor can walk the entire trail and have his attention drawn to the numerous points of interest on that trail through his notes.

Hiking trails are those that take more than a day and will involve the hiker staying away from the base in a lodge, hide, or in a camp.

Other forms of trails that are being planned are bicycle and pachydermian trails. It is necessary that both these trail systems be distinct from walking trails.

Special trails should also be considered for the handicapped and disabled in keeping that the Park should be open to as many people as possible.

Another modification of the basic trail system is to develop a walk through the canopy. This will allow visitors to experience what it is like to walk through the forest heights and observe primates, top canopy birds and other species confined to the forest tops. It is proposed that this walk will not involve any climbing a ladder but rather start fairly high up on a steep slope so that an almost horizontal walk will allow the visitor access to the upper canopy of trees lower down on the slope.

Another notable variation on the hiking trail theme is the historical trail such as that taken by Datuk Bahaman and Mat Kilau up the Tembeling into Kelantan and Trengganu during their struggle with the British.

Wildlife observation

Wildlife observation is another activity of the tropical rain forest. Normally the wildlife of the forest are extremely difficult to see due to their shy and cryptic natures as well as the dense vegetative cover. Even when an animal is spotted it is rare to see it for more than a few seconds. One way of overcoming this is to have hides in the forest overlooking salt licks. In these circumstances, watching some seldom seen animal of the rain forest can be a most rewarding experience. Another group of interesting animals that are difficult to see are the small, shy and ground living animals such as the mouse deer. The proposed way of observing these animals is to have subsurface hides where the observer basically conceals himself in a compartment in the ground with his eye almost at ground level, looking through a camouflaged opening.

Another new aspect of animal watching that can be considered is to observe fish and other aquatic creature through a transparent underwater tunnel or compartment with glass sides set next to the bank beside a deep pool. For this purpose clear rivers such as the Sungai Tahan are required.

Interpretive areas

Generally, an interpretive area can be any of the above facilities whose unique scientific significance has been made available to the visitors through literature, personal contact with interpretive staff, self-serving interpretive or even unobstrusive signboards. The more direct interpretation facilities are the actual visitor interpretation center which should work together with an outdoor amphithearter at which visitors can watch wildlife documentaries and listen to illustrated talks. The visitor center should also include a small natural history museum.

Other facilities that are provided to the park visitor are camp grounds and lodges in more remote areas.

Camping areas

Other extremely important park facilities which must be taken into account in all planning for visitor facilities are water supply, sewages, solid waste disposal, dump stations and incinerator. These must be planned both for major visitor centers as well as the smaller lodges and camps. As rubbish accumulation on the longer treks have become a problem primarily because of the general lack of civic consciousness on the part of hikers, it may be necessary to even make rules as to the kind of food items and their packing that may be normally carried on a long hike such as up to Gunung Tahan.

One important visitor requirement that has thus far been overlooked in park planning in this country is a general cross – religion prayer and meditation hall for the use of any visitor of any religion.

Finally, because of the remote area that the Park is situated in, the energy requirements of each center must be adequately planned for.

ENVIRONMENTAL EDUCATION PLAN

The environmental education program is a part of overall interpretive plan of Taman Negara. This plan has a two-fold purpose:

1. to develop a public understanding of the courses that shape the environment, and

2. to provide individual awareness of man's dependency and responsibility for environmental quality.

There is an increase in the number of visitors to the Park who have had little contact with nature and who have little understanding of nature and man's relationship with it. Taman Negara is facing problems with this group where they damage some of the Park's resource. Therefore it is the duty of the Park service to make them respect the resources, refrain from activities which damage those resources and support continued preservation. There are already evidence of both natural and man-induced environmental changes in and around Taman Negara and this makes it an ideal place to instill the understanding of environmental conservation.

This understanding should be covered by the interpretive program but for large groups (eg. student, school children and clubs), a special nature study program is needed.

Such a program is being developed. A nature study center has already been built and run at Kuala Atok and new centers have to be designated. The areas suggested are at Kuala Cheruai, Pahang, Kuala Koh, Kelantan and Sungai Chanchin Trengganu.

The plans for the Environmental Education Program should include facilities for five major studies:

1. Biological resources (forestry, ornithology, plant succession and conservation),

2. Water resources (aquatic biology and water pollution),

3. Earth resources (subsurface biology, geology and soil),

4. Meteorological resources (astronomy, air pollution and weather), and

5. Heritage (historical sites).

The curriculum and program for a nature study has been developed at the Kuala Atok center. This program could be expanded to include the proposed sites mentioned above.

INTERPRETIVE

Interpretation is the art of explaining the place of man in his environment, to increase visitor or public awareness of the importance of this relationship and to awaken a desire to contribute to environmental conservation. It is the intention of the department to highlight natural features, historical and cultural aspects. Although nature related interpretive programs have been developed, its important that extension should be continued and expanded. Less developed historical and cultural interpretive programs should also be looked into. "Forester syndrome" (e.g. creation of arboretums, nature plots, tree tower, ornamental tree planting) which has monopolized much of national park management worldwide has created less favored forestry dominated national parks. This factor should not be allowed to influence the Taman Negara interpretive plan.

Visitors from urban areas are relatively well educated and sophisticated whereas visitors from rural areas tend to be less sophisticated. Method and approach of interpretation differs greatly between these two groups of people. Thus good interpretative programs must take such factors into account.

When a visitor arrives at a point of entry, park personnel should be ready to provide information. Information booklets and verbal explanations are useful for visitors to plan their stay.

A visitor center should include displays of interesting features of the Park, important wildlife species, miniatures models and other facts important for visitor education. The visitor center should be informative to educate the public about the Park. The attached souvenir shop should sell articles with interpretive themes.

Field guides in the form of small booklets about the flora and fauna of the Park are needed for reference by visitors, naturalist and other interested people who may wish to study the Park's living communities. All interpretive efforts should emphasize on the conservation of the flora and fauna of the Park.

Interpretive themes should be presented through various media. The visitor is best introduced to the resources through exhibits and brief film presentations at the visitor center. Various themes concerning the Park and its flora, fauna and other matters of interest are presented at evening programs in the amphitheater. The museum could provide visitors with a des-

criptive and visual outline of the total conservation education offered at the Park.

Improved trail interpretation could be achieved by having way-side exhibits. To make wildlife observation meaningful in high hides, there should be an interpretive program for this facility, including picture guides and call identification information which should be displayed in hides.

RESOURCE MANAGEMENT PLAN

Resource management within the context of Taman Negara is the action of ensuring the proper utilization and protection of its natural resources. The attraction of Taman Negara lies in the beauty and uniqueness of its natural environment. This is an invaluable heritage of the country that must be kept and maintained.

Boundary marking

The Park boundary should be marked especially at access points with a proper rentis maintained to mark the entire Park boundary. This rentis will be used for Park boundary patrols.

Guard post and patrol

Guard posts will be constructed at key access points along the perimeter of the Park to facilitate the protection of the Park resources. The post will also acts as bases for a comprehensive boundary patrol system to be set up.

Enforcement

It has been provided under section 9(i) of the Park Enactment that no persons shall within the State Park willfully or negligently destroy, damage or deface any objects of zoological, botanical, geological, ethnological, or other scientific or aesthetic interest of value. Conflicts between visitor users and resource protection are bound to occur. Cooperation and understanding between the Park administration and the user are required for the effective protection of the country's national heritage.

Zoning

Area zoning is an effective way to provide administrative and development control over areas designated to meet different management objectives. A refinement of the zone can be made after the trends in visitor use and the impacts of the use on the Park were assessed.

Trails

It is anavoidable to regard walking trails as an intrusion into the natural environment. However such trails do link points of interest in the Park. They also allow visitors to gain access to these points of interest with minimum environmental disturbance. Trails are also useful as passive method of visitor control, channelling people to areas of high recreational use and away from areas that are meant to be more restricted.

Landscape management

This program may be carried out in designated zones for the purpose of enhancing aesthetic value of an area and may include:

a) increasing the ability of certain areas to absorb public use through vegetative management, and

b) management of landscape for educational or interpretive purposes.

Research program

The collection of research materials pertinent to the Park resources and interpretive theme should be encouraged. Research centers or stations should be developed with the responsibility of preservation, development and interpretation of the Park resources.

Interpretive facilities

There should be adequate interpretive facilities for visitor orientation, understanding and appreciation of the Park's resources.

Recreational activities

Recreational activities which facilitate visitor enjoyment of the primary resources of the area are to be encouraged. Facilities should be provided but to the extent that they do not adversely affect the Park's resources.

Natural resources

Natural resources should be managed so that they remain as far as possible in their natural form. The originality of these resources must not be altered. All development planning must take into account this important principle.

Wildlife

Wildlife conservation and management is one of the primary management objective of the Park. Much of Malaysia native fauna has become greatly reduced in distribution and abundance due to loss of habitat. A special management program should be planned to provide for improved habitats and wildlife protection.

Maintenance

Maintenance is necessary for the preservation and restoration of the wilderness scene to whatever extent feasible. It also includes maintaining the recreational facilities and buildings. In the current and proposed development, maintenance priorities should be established on how the funds should be best utilized.

IMPLEMENTATION

This Taman Negara Master Plan is to serve as a planning document or guide for specific management plan. So far, twenty-four specific plans have been identified as necessary and are recommended for further action by Master Plan Working Committee. These plans are prioritized based on the urgency and needs to accomplish the goals and objectives as stated in this Master Plan.

Priority I : Urgent action

Priority II : Important action

Priority III : Other actions necessary for implementation

MANAGEMENT PLAN AND PROGRAM

1. Interpretive plan — Priority I
2. Environmental education plan — Priority I
3. Site development plan — Priority I
   - Kuala Tahan
   - Kuala Koh
   - Kuala Cheruai
   - Sungai Chaching
4. Recreational facilities plan — Priority I
5. Enforcement plan — Priority I
6. Research plan (primarily of the natural resources) — Priority I
7. Species management plans
   - endangered species recovery — Priority I
     - : Rhino
     - : Seladang
   - threatened species — Priority II
     - : Elephant
     - : Tapir

- common species management — Priority III
  - : Sambar and barking deer.
  - : Napoh and mouse deer.

8. Natural resources management plan — Priority II
9. Habitat management plan — Priority II
   - food plot
   - habitat modification
   - fishery management
10. Maintenance — Priority II
    - building
    - engines
11. Aboriginal use of the park — Priority II
12. Outdoor recreation program — Priority III
    - water-oriented
    - forest-oriented

The task of implementing the specific management plan or program would be executed by the DWNP or by other appointed parties.

Agencies for implementation

1. Site development	Lead agency	:	J.K.R./DWNP
	Alternative I	:	Consultants/DWNP/Army Engineers

2. Recreationai facilities	Lead agency	:	DWNP/J.K.R./Army Engineers
	Alternative I	:	Consultants
3. Interpretive	Lead agency	:	DWNP
4. Environmental education	Lead agency	:	DWNP
	Alternative I	:	DWNP and Ministry of Education
	Alternative II	:	Ministry of Education
5. Enforcement	Lead agency	:	DWNP
	Alternative I	:	DWNP and Police Department
6. Research	Lead agency	:	DWNP
	Alternative I	:	DWNP and Research Institutions
7. Species management	Lead agency	:	DWNP
8. Habitat management	Lead agency	:	DWNP
9. Physical maintenance	Lead agency	:	DWNP
	Alternative I	:	J.K.R.
	Alternative II	:	Private contractor
10. Outdoor recreation program	Lead agency	:	DWNP
	Alternative I	:	DWNP/NGO
11. Natural resource management	Lead agency	:	DWNP
	Alternative I	:	Other government agancies

Consultation and coordination

The following agencies are consulted for implementation and their functions are indicated:

Primary agencies

Ministry of Science, Technology and Environment (soliciting fund for implementation).

States Government of Pahang, Kelantan and Trengganu (Review Committee Member).

Department of Wildlife and National Parks (implement approved project proposals).

Public Works Department (project supervision)

Treasury Department (approval of fiscal budget)

Public Service Commission (creation of jobs).

National Electricity Board (power supply to Park headquarters)

Ministry of Defence, Army Engineering Corps (road, site and recreational developments)

Other agencies

District Land Office.
Department of Irrigation and Drainage.
Department of Orang Asli Affairs.
Universities and Research Institutions.
Forestry Department.
Non-government Organisations
Department of Education
Police Department.
Department of Environment.

Review and reporting requirement

There shall be a Review Committee for Taman Negara Master Plan. The committee members shall be responsible to review and evaluate the proposals for project implementation. The members shall review this plan every five years. They should make the necessary comments, adjustments or modifications for the second term implementation of the Master Plan.

The Review Committee shall also write a report pertaining to the accomplishment of the plan.

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ACKNOWLEDGEMENTS

The drafting team wish to acknowledge the direction, encouragement, and support provided by the Director-General of Wildlife and National Parks, Peninsular Malaysia in the preparation of this Master Plan.

Information on the history of the Ulu Tembeling especially facts relating to the activities of Mat Kilau and Dato Bahaman were provided verbally by Encik Mat Taha bin Awang Lela. Information pertaining to the history, archaelogy, culture, and anthropology of the Park was provided by Jasmi bin Abdul.

Two personal computers were utilised for the work of producing this Master Plan. One belonged to Louis Ratnam and the other is jointly owned by the officers of the Management Division of the Department of Wildlife and National Parks. Louis Ratnam also initiated the team to the personal computer and the word processing program that was used. These assistances are duly acknowledged.

The help of all other officers of the Department who assisted in one was or another in this preparation is also gratefully acknowledged.

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TOPOGRAPHY

Taman Negara contains a wide range of rock types and has land form below 80 m to over 2000 m elevation; including the country's highest elevation. About 17% of Taman Negara lies on granite, the rest on sedimentary rocks, mostly shales. There are few scattered limestone hills, including Gua Peningat (730 m) the highest and one of the largest in the country. The land over 1500 m is entirely on the Tahan Massif, a sandstone quartzite block with Gunung Tahan (2187 m) the highest mountain in Peninsular Malaysia as its summit. The bulk 57% lies below 320 m (only 0.6% below 80 m, 28% lies between 300–770 m, 11% between 770–1230m, 2% between 1230–1500 m and 1% over 1500 m). The steepland boundary lies at about 140 m. Roughly about 15% of the Park lies below this level and is thus topographically suitable for agriculture. The poor sedimentary-derived soil of the part below the steepland boundary is however probably unsuitable for agriculture.

The Tembeling runs through a gorge from Kuala Kenyam down to Kuala Tahan with high forested bluffs on both banks and rapids in the river bed.